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A Study
OF
SIXTY-FIVE CASES SEEKING RELIEF AFTER SHORT-CIRCUITING OPERATIONS.

Read before the Medical Section of the Royal Society of Medicine on Feb. 28th, 1922,

BY EDMUND I. SPRIGGS, M.D., F.R.C.P. LOND.,
SENIOR PHYSICIAN;
AND
O. A. MARXER,
RADIOGRAPHER, DUFF HOUSE, BANFF.

THIRTY years ago our knowledge of the various forms of indigestion, as set forth in text-books of medicine, was a morass of inaccuracy and vagueness. I remember well the feelings of dismay with which I came to the end of an account of the diseases of the stomach and intestines written by a shrewd physician of that day, and compared it in my mind with the clearness of the section on diseases, for example, of the lungs or of the nervous system. The researches of the latter part of the nineteenth century were, however, beginning to bear fruit. Pasteur and Lister had made abdominal surgery possible. Wölfler had shown that the stomach could be joined to the small intestine not only with impunity but with benefit in certain conditions. Pawlow then opened new ground in gastric and intestinal physiology, and the followers of Roentgen revealed to the eye of the observing physician the workings of the alimentary tube. Many have pressed along the paths of research thus opened up, and to-day, although there is, of course, an infinite deal yet to learn, the diseases of the stomach and intestines can be described, diagnosed, and treated with not less success than those of other regions of the body.

The greatest contributions to recent knowledge of organic diseases of the stomach and intestines have been made by surgeons and radiologists, although we must not forget the advances made in the classification and treatment of tropical diseases of the intestine by bacteriologists and parasitologists. But it is abdominal surgeons who have taught us the most, in the last 15 years especially, and I say this at the beginning of this paper in order that its title shall not give rise to a wrong impression. The benefit, in particular, of short-circuiting operations is very great, and is, indeed, so obvious that the number of these operations that are now performed is enormous. The successful results may be found everywhere, but such patients do not need to go to a doctor. The unsuccessful, though far less numerous, are sometimes in evidence, and the discussion of a series of them is the object of this paper.

CONDITIONS OF THE INVESTIGATION.

The subject has received attention of late, as in the writings of MacLennan, Mann, Balfour, Hutchison, Moynihan, Paterson, Sherren, Lane, Mummery, and others. Our excuse for this communication is, first, that all these cases were in a hospital and were subjected to a detailed investigation by the same observers, such as is not often possible unless the patient and his doctors are easily accessible to one another throughout the period of observation; and, secondly, that the subject is approached from the point of view of the physician, whereas the bulk of recent writings has been from the pens of surgeons.

For the past few years the patients of this class have formed between 5 and 6 per cent. of the total number of gastro-intestinal cases seeking admission at Duff House.

Of the 64 consecutive patients whose cases are described, 51 had had gastro-enterostomy performed, 9 partial colectomy, and 4 ileo-sigmoidostomy. The numbers are too small to yield statistical deductions. Nevertheless, a comparatively small number of cases, in all of which laboratory investigations have been made, will supply information which cannot be got from very much larger numbers in which the means of inquiring into function are only those which are available in the consulting-room and on the operating table.

I. GASTRO-ENTEROSTOMY (51 CASES).*

Reasons for Operation.

It is sometimes said that unfavourable symptoms arise after gastro-enterostomy mainly because the operation has been done in cases which would now, with our present knowledge, be regarded as unsuitable. This is only true in part. In 32 of the 51 patients the evidence of the presence of ulceration in the stomach or duodenum, or both, at the original operation was good. In six or more there was other defensible reason for the operation—namely, pyloric stenosis, 2 cases, and hour-glass stomach, obstructive adhesions of duodenum, pyloric scar, and a pouch in the posterior wall of the stomach, presumably due to former ulceration, 1 each. If these 6 be added to the 32 cases of ulceration it appears that in 38 out of 51 cases—i.e., 75 per cent.—the operation would be regarded as justifiable, assuming that sound medical treatment had been applied without success.

In 13 cases, 25 per cent., the reasons for which gastro-enterostomy was done were more doubtful. In four of these the operative evidence of the pyloric stenosis diagnosed (2 cases) or duodenal ulcer (2 cases) was not clear. In the remaining 9 the operation was done for indigestion without ulcer in 3 cases, and for vomiting, bilious vomiting, diarrhœa and dilated stomach, constipation and dropped stomach, constipation and neurasthenia, and headache in one case each. In one case we know that the anterior operation was performed and there may have been one or two others; the rest were posterior. In four cases a second operation for some complication was done immediately or soon after the first one. Three of the operations were done abroad and in two others the name of the surgeon was not mentioned. Eight were done by surgeons with whose work in this department of surgery we are not familiar. The remaining 32 gastro-enterostomies were performed by leading surgeons of the day. These 32 include 11 out of the 13 in which no organic lesion was proved to be present at the operation. We may conclude, therefore, that the majority of these patients had the advantage of surgical skill above the average available to the general population at the time of their operations. As regards the date of operation, six were operated upon in the years 1899 to 1904, and seven in 1906 to 1910. More than half the patients, 27 out of 51, had their operation done in the five years, 1911 to 1915. In the last five years, 1916 to 1921, there were 11. In only one patient has the short-circuit been made for less than two years. That patient is included in this series because a second operation has already been performed on our advice.

Symptoms.

The symptoms complained of in order of frequency were as follows:—

Pain	26	Headaches	11
Flatulence or distension	21	Bleeding†	9
Weakness	19	Discomfort (other than pain)	9
Constipation	19	Nausea (without vomiting)	8
Wasting	14	Regurgitation (not of bile)	3
Vomiting	13		
Vomiting or regurgitation of bile*	8		
Diarrhœa	11		

* Not included under preceding head.
† Including melæna and two cases showing occult blood on a hæmoglobin-free diet.

Also, in one case each, tetany, cramps, œdema, bad taste, sore tongue, itching, giddiness, depression, nightmares, sleeplessness, neuralgia, and sciatica.

Pain.—If interpreted strictly, pain is a most valuable symptom and one which must always receive

* We state for comparison, at Dr. Hurst's suggestion, the following figures: During the same period in which these 51 patients sought admission for pain or discomfort after gastro-enterostomy, done mainly for the relief of gastric and duodenal ulceration or their consequences, the number who presented themselves suffering from actual gastric or duodenal ulceration was 91.

close attention. In cases in which, in my opinion, the pain has been genuine, evidence of an organic lesion has nearly always come to light sooner or later. For example, in this series of 26 patients complaining of definite pain, in two it was thought that there was a strong nervous element and that probably a more phlegmatic patient would have called it discomfort. Of the remaining 24, in 15 X ray evidence of ulceration or other gross deformity about the stoma was obtained, and in 10 of these the diagnosis was confirmed at operation or by a subsequent hæmorrhage; in three others there was accumulation in the stomach with spasm; in one each adhesions, ulceration of the colon, and gall-stones. There remain only three in this series suffering from genuine pain for which no gross organic cause was made out. These recovered and may, of course, have had some organic condition which yielded to the treatment prescribed.

Weakness and Wasting.—These symptoms are commonly described by patients as being due to their not making proper use of the food they take. This is only true to a limited extent, as was shown by H. J. Paterson in 1906. Analyses of the urine and fæces on a fixed diet for a three-day period in some of our own cases (by A. J. Leigh, B.Sc.), gave the figures shown in Table I. A healthy man took the same diet for a control.

TABLE I.—*Absorption of Food after Short-Circuiting Operations.*

No.	Nature of case.	Fat: per cent. absorbed.	Nitrogen: balance, grammes	Carbohydrate: per cent. absorbed.	Glycosuria.
	Normal	96	=	100	0
270	Gastro-enterostomy	82	−2	..	0
75	,,	84	..	..	0
112	,,	91	+1	99	0
99	,,	91	+1	95	+
670	Gastro-entero-colic fistula	69	−1	100	0
,,	After restoration of parts	96	+3	100	0
72	Partial colectomy	91	+1	..	0
1619	,,	95	+1	100	0
1412	Ileo-sigmoidoscopy	88	..	..	0

There is, therefore, a deficiency in the absorption of fat, although none of these patients had actual diarrhœa, but the loss of fat in the fæces varies in four cases only from 5 per cent. to 14 per cent. above the normal. In the patient showing the larger loss the motion was loose on the second day of the three days' test, and the result would probably be due in part to the more rapid passage through the bowel on that day. The absorption figures are similar after short-circuiting operation upon the bowel. The main cause of wasting is that the patient eats less food on account of discomfort. The sensation of *weakness* is due in part to the same cause and in part to the reflex lassitude and disinclination for exertion which is set up by uncomfortable abdominal sensations.

Diarrhœa is generally ascribed to irritation of the bowel from food which has not undergone gastric digestion. While this is probably so, it does not seem to be simply due to food passing too quickly into the bowel, because of the 13 patients who complained of diarrhœa only three showed rapid emptying of the stomach with X rays. Moreover, three patients in whom material rushed through the stoma with unusual rapidity did not have diarrhœa. More suggestive is the fact that in three of the patients who had diarrhœa there was accumulation and delay in the pyloric part of the stomach, beyond the stoma, with possible decomposition of food. Six of the diarrhœa patients showed a subacid gastric juice, three a normal acidity, and one superacidity.

Sugar was present in traces in the urine of many patients. It appeared to be independent of the amount of carbohydrate taken. No case has, to our knowledge, developed diabetes.

Examination of the Alimentary Tract.

Acidity.—All the analyses were done gravimetrically by Mr. Leigh, or, during most of the war, by Mr. A. B. Weir. A gastric juice containing 0·1 or less of active chlorides is called subacid;† if the active chlorides are a little above 0·1, and at the same time there is no free HCl and the mineral chlorides are high the juice is also called subacid; three cases were so classified. All other juices giving active chlorides from 0·1 per cent. to 0·2 per cent. are called normal, and those over 0·2 per cent. are called superacid. Two test-meals were usually given, a test breakfast of toast and tea and a test lunch of minced meat, potato, and water. In 13 patients test-meals were not given on account of risk of hæmorrhage or for some other reason. Of the remaining 38, in 25 there was subacidity, in 4 normal acidity, and in 9 superacidity. The rule is that the gastric acidity is greatly reduced after gastro-enterostomy, as the acid juice is drained off, and what is not drained off is neutralised in whole or in part by alkaline juices entering from the small intestine, with an increase, as Paterson has shown, of the mineral chlorides. The success or otherwise of the operation does not, of course, depend solely upon this change. For example, we have here 25 cases out of 38 in which the reduction of acidity has taken place, but symptoms referable to the stomach are still caused by other factors. They include 18 cases in which the operation was done for ulcer or stenosis, and 7 in which it was done for less obvious reasons.

Organic lesions, such as ulceration, twisting of loops, &c., were, however, definitely less common in the subacid cases. For example, ulceration was proved in only 2 out of 25, whereas in the superacid cases ulceration has been proved to be present in 3 and the diagnosis appears clear in 2 others—i.e., 5 out of 9; also in the cases of normal acidity (which is, of course, superacidity for a gastro-enterostomy) an active lesion has been demonstrated in one and is probable in two others. Thus there appears to be an active lesion in 8 out of 13 which were not subacid as against 2 out of 25 which were. We know experimentally that superacidity may cause ulceration when there is a predisposed focus. It must be remembered, also, that with a gastro-enterostomy the opposite may happen; an ulcer causing stricture or spasm at the stoma or in a loop may mechanically, by the prevention of drainage or of the inlet of intestinal juices, keep the acidity of the gastric juice up to the concentration at which it is secreted. A normal or superacid juice, therefore, which is an abnormal finding after gastro-enterostomy, may be either a cause or result of ulceration.

The *Rate of Passage* of the opaque meal through the stomach varied from an immediate rushing through to over 48 hours. In 15 cases the food had all left the stomach in less than three hours. In 8 of them it left very quickly; 7 of these suffered much discomfort, and were, on the whole, among the most wretched of the patients. In such the position assumed after food can be shown to delay the emptying of the stomach—for example, lying down, particularly on the left side, or sometimes half recumbent on pillows, turned a little to the left. A few observations in the X ray room will show the best position. The consistency of the food is also naturally of importance. A fluid or semi-fluid meal may rush through the stoma, whereas a solid meal will take a normal time to discharge.

In cases of gastro-enterostomy we thicken the ordinary opaque meal (125 to 150 g. barium sulphate and 500 c.cm. buttermilk) by the addition of several rusks which are eaten before the barium mixture. A second meal, more solid still, is often given, consist-

† The terms hyper- and hypo-acidity are etymologically hybrids and have the greater disadvantage that they are confusing in speaking and dictating owing to the similarity of the sounds. The terms subacid and superacid are not open to either of these objections.

ing of barium sulphate, bread, and a minimum of milk (Figs. 1 and 2). In 22 the rate of passage was four to five hours. In 14 the food took six hours or more to leave the stomach. These included some serious deficiencies in drainage due to deformities and adhesions. In three the opaque material was still present in the part of the stomach distal to the stoma 24 hours after ingestion, and in one more than 48 hours. This patient suffered from tetany, general œdema, and auricular fibrillation. He recovered ultimately for a couple of years, but has since died. In this group of cases gastric lavage and massage may work wonders when there is no evidence of ulceration (Figs. 3 and 4).

Passage by Stoma and Pylorus.

In 27 cases the opaque material left the stomach at one examination by the stoma only. This is, of course, the route it is intended to take, and in some cases is forced to take by obliteration of the pylorus. In some patients, however, in whom the pylorus was said to have been tied, barium could be seen to pass by it, and it is common knowledge that a ligatured pylorus tends to open again (Fig. 5).

In 12 cases material left by the pylorus at one examination and by the stoma at another. This shows that one examination may not be enough to justify an opinion that either the stoma or the pylorus is not working, especially if there is not careful and experienced screening with changes of position. In 7 cases the same meal left by both pylorus and stoma, and in some of these the pylorus was made to fill by lying the patient on the right side. It is curious that there were not more of these. It seems that if the meal begins to leave at one opening it tends to keep to that although another may be available.

In 4 cases no material could be seen to pass by the stoma in spite of manipulation and changes of position. One of these had an hour-glass stomach, in which material remained, as mentioned above, more than 48 hours. In another there were symptoms of jejunal ulceration. The stomach emptied in seven hours. The third patient had a dilated stomach and did well with gastric lavage. Seven months later a very little material could be seen to pass by the stoma. In the fourth patient no signs of the stoma could be seen. The stomach emptied in a normal time. In both the last two patients bile entered the stomach and gave rise to discomfort, although the food did not leave by the stoma.

Presence of Bile.—In 13 cases bile was present in definite quantity in the contents of the stomach recovered by the tube, and in four others traces were reported. The patient may be unconscious of this, or it may be one of the chief complaints. In one case in which no bile was present in the test material the patient subsequently vomited almost pure bile.

In 14 cases *the stoma was not at the lowest part* of the stomach and often not near it (Figs. 6, 7, and 8). In looking at these stomachs it is difficult to escape the conclusion either that it is not easy at the time of operation to determine what the lowest part of the stomach will be when the patient is in the erect position or that contraction takes place afterwards, raising the position of the stoma relatively to the greater curvature. It is probably no disadvantage for the stoma to be a little above the lowest part, provided that contraction of the stomach as a whole can take place and bring material to the opening; but when the latter is so high that there is considerable accumulation between the stoma and the pylorus discomfort is complained of. Seven of these patients were among those who suffered a great deal.

Deformities about Stoma.

These require careful observation on the screen and must be confirmed by the detailed examination of series of films. The written record of screen work by a practised observer when compared with the appearances of a series of short exposure films show consistently that the eye cannot be relied upon for the determination of nice points. Only constant appearances are conclusive. The more experience gained in this work the more often is it possible to recognise abnormalities in the stoma itself, the loops, or the adjacent part of the stomach.

The stoma may be observed to be obstructed, narrow, of normal size, or very wide (Figs. 9, 10, 11, and 12).

In a recent patient, not in this series (1756), gastro-enterostomy was advised for the obstruction caused by a duodenal ulcer. Pain came on and a year later hæmorrhage occurred. At an operation an ulcer in the stomach was observed to be on the point of perforation. A silk stitch hung from it. The colon was adherent (Figs. 13 and 14).

Deformities, Contractions, or Dilatations of the Jejunal Limbs.

These should be looked for, and when definite and constant are significant. In ten cases deformity or contraction of a loop was seen or great delay in a jejunal coil. Deformities may be due to jejunal ulceration (Fig. 15) or to a twisting of the loop from the parts not lying naturally in the erect position.

Four of the patients have been operated upon. In three jejunal ulcers were present, and in the fourth, in which there was delay rather than deformity, the loop was found to be twisted between a former lateral anastomosis and the stoma. A gastric ulcer for which short-circuiting has been done may persist unhealed. We have seen this in at least one case, a large ulcer being adherent to surrounding parts. This patient is suitable for prolonged feeding by jejunostomy.

In one patient the food passing into the proximal jejunum from the stomach met food passing from the pylorus, and this was thought to be the cause of the discomfort.

Duodenal Cap Contracted.

In several cases the duodenal cap was seen contracted. This may be the site of an old ulcer, and more than once we have thought that there was persistent duodenal ulceration which had not healed after the gastro-enterostomy. Mr. Sherren in his interesting and informing paper expresses the opinion that unless the pancreas is eroded duodenal ulcer is generally cured by gastro-enterostomy, and subsequent symptoms are due to complications. As a general statement this accords with our experience that if there are acute symptoms after gastro-enterostomy for duodenal ulcer the trouble is likely to be found in the region of the stoma. But a duodenal ulcer may recur after gastro-enterostomy without implication of the pancreas being noted at re-operation.

In four cases *hypersecretion* was observed on the screen. Three of these had definite lesions, two duodenal ulcers with hæmorrhage, and one a gastro-jejuno-colic fistula; in the fourth patient there was a very rapid passage with much wasting and discomfort. Constipation is frequently complained of and coincides in a number of cases, though not in all, with considerable delay in the colon, as shown by X rays. It is in this as in other cases generally amenable to treatment by a suitable diet and massage.

It would be expected that with constant or recurring abdominal discomfort and poor nutrition the nervous system would suffer. Eight of these patients were definitely classed as suffering from *neurasthenia*. Only severe cases were included under this term. With a less rigid classification more might be included. It would be difficult to say that these patients were not neurasthenic before the operation was done; indeed, I should judge that at least six of them were.

There were, of course, various other findings not obviously connected with the gastro-jejunostomy, but these need not detain us.

Diagnosis.

In these patients, most of whom complain of several symptoms and yield on examination evidence of more than one disorder or disturbance in the functions of the stomach or intestine, it is often a matter of great difficulty to decide which are the important factors causing the patient's ill-health—that is, to make a diagnosis. The following list will give an idea of the

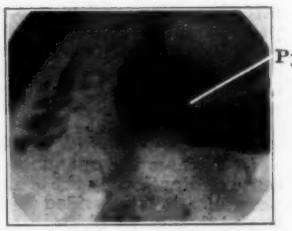
1

Taken immediately after opaque buttermilk meal. Erect position. All except traces has entered the small intestine.

2

Photograph (prone) of the stomach shown in Fig. 1, immediately after a more solid meal, consumed while the patient was lying on her face. All the material is still in the stomach. By this means the stoma and jejunal loops can be examined at leisure.

5



Shows barium passing through pylorus (Py.) which had been occluded.

3

Ten hours after buttermilk meal; opaque material lies in the distal part of the stomach below the level of the stoma; it may also be seen in the third part of the duodenum and in the jejunum.

6

Lateral view of a dilated stomach in which no material was seen to pass through the stoma. The stoma is not at the lowest point; much bile entered the stomach. Dc., duodenal cap. Pg., pyloric gap. S., stoma.

7

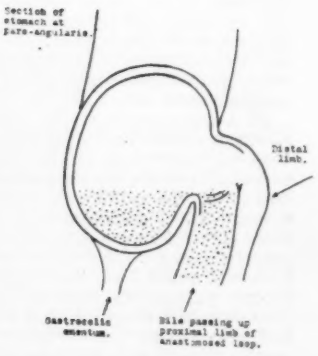

Section of stomach at Pars-angularis.
Distal limb.
Gastrocolic omentum.
Bile passing up proximal limb of anastomosed loop.

Diagram showing how bile may enter and be retained in such a stomach before it could reach the distal limb of the jejunum. (See Fig. 6.)

4

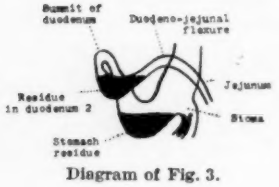


Diagram of Fig. 3.

8

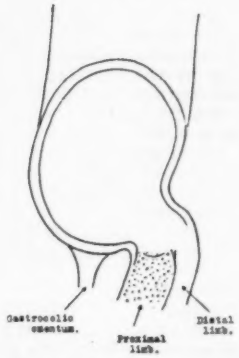


Diagram showing that it is unlikely that much bile can be retained if the stoma is low. (See Figs. 6 and 7.)

9

A narrow stoma (St.).

10

A wide stoma (St.) with constant contraction or incisura (arrow) on the pyloric side.

11

The same stomach at emptying stage.

12

An incisura or notch (arrow) at the pyloric side of stoma (two gastro-jejunal stitch ulcers were present).

13

This patient had a duodenal ulcer with almost complete obliteration of the lumen. Gastro-enterostomy was done. A year later he was readmitted for severe pain, and X ray examination showed the protrusion of an ulcer proximal to the stoma. Taken erect, neither limb of the loop filled properly, the distal limb being specially narrow. The above photograph was taken half an hour later in the prone position. (Arrow points to ulcer.)

14

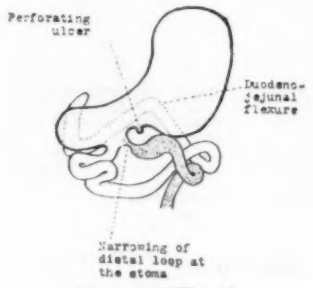


Diagram of Fig. 13.

15

A constant protrusion at the site of an ulcer is seen on the distal limb: extensive ulceration and adhesion was found at operation. Note the rigid lesser border of the stomach, which was adherent to the liver.

16

Case of adhesion of colon to stomach. Both are filled with barium.

17

Shows a blind loop of ileum (side-to-side anastomosis). The preceding ileal coils are in the position formerly occupied by the ascending colon.

18

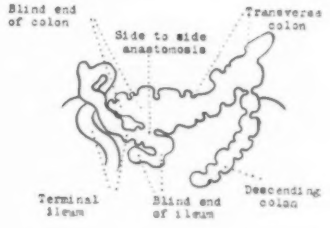


Diagram of condition shown in Fig. 17.

conclusions come to, upon which treatment and advice given to the patient were founded.

		Operations.
Gastro-jejunal or jejunal ulceration	10	4
Contraction of jejunal loop	2	1
Gastro-colic fistula	1	1
Recurrent duodenal ulcer	5	2
Too much bile regurgitated into stomach	4	3
Irritation from delay in stomach	9	2
Irritative diarrhœa	2	—
Neurasthenia, without other qualifying diagnosis	2	—
Dilated stomach and phthisis	1	—
Colitis	1	—
Pyorrhœa and alcohol	1	—
Diverticulitis	1	—
Indigestion due to gastro-enterostomy	12	1
	51	14

The last group of 12 cases, in which the indigestion at present complained of was classed as due to the gastro-enterostomy, comprised those in which the history supported this view and in which no abnormality was found other than subacidity, rapid emptying, or such condition which in other patients is commonly borne without discomfort.

In one case the opinion was given that the cause of the trouble was recurrence of bile, and jejunal ulceration was found at operation. In another case the presence of blood in the stools, which gave rise to the suspicion of jejunal ulcer, appeared ultimately to be due to ulceration of the colon. In the case of *gastro-jejuno-colic fistula* mentioned above, X ray examination did not demonstrate the passage of material from the stomach to the colon. A study of the literature shows that this has not infrequently been the case. An account of the case has already been published.[3] Since we have had this case in two others we have noted on the X ray plates that the colon appears to be adherent to the stomach in the region of the stoma. If ulceration were to extend to this adherent area presumably a gastro-colic fistula would form (Fig. 16). The recovery of the power of absorption of food after the gastro-jejuno-colic openings were sewn up is shown strikingly in the table already given of absorption of food after short-circuiting operations.

Medical Treatment.

In every case the treatment is naturally directed to remedying whatever condition has been found to be abnormal. Patients in whom the passage of material appears to be too rapid are given a solid diet, no liquid being drunk at meal times, but a good quantity taken about an hour before food. This leads to a slower action of the stoma. A surgeon who has had the operation performed upon himself, tells me that he has found drinking large quantities of fluid immediately before his meals lead to disappearance of headaches. Very simple food must be taken and the intervals at which it is prescribed will depend upon the X ray findings, noting whether discomfort comes on when the stomach is full or empty and whether position affects it. The amount of fat which a patient after gastro-enterostomy can bear is usually less than normal. There is no one diet which is suitable, but the results of the investigation followed by a fortnight's experiment with different foods will generally allow a definite regime to be arrived at.

Regular rests and exercise are prescribed. Hydrochloric acid, with or without pepsin, sometimes does much good. Iron and arsenic are given for anæmia; massage and paraffin for constipation. When there is delay beyond the stoma the first consideration is to decide whether there is evidence of ulceration. If not, gastric lavage, as mentioned above, with massage to the distal part of the stomach, guided by the X ray picture, gives great relief and may get rid of all the symptoms. The treatment is controlled by further X ray examinations. Dilated stomachs in which the stoma is not working are treated by lavage, and may regain their normal size and empty through the pylorus in a natural time. Lavage is useful also when bile is regurgitated into the stomach. One patient, a doctor, whose operation was done for superacidity and in whom too much bile passed back into the stomach, is now able to dispense with the tube after washing out his stomach regularly for years, sometimes several times a day. I advised the undoing of the anastomosis some years ago, but he preferred to continue the use of the tube. The irritative diarrhœa is often greatly benefited by washing out the colon under low pressure, using saline solution, with the changes of position and deep breathing which carry the fluid round to the cæcum. Other symptoms are treated as they arise.

Gastro-jejunal ulceration or jejunal ulceration may be treated medically exactly as a gastric or duodenal ulcer would be treated—namely, by complete rest in bed and diet, beginning with egg and milk mixture and olive oil if well borne, and gradually rising by successive steps to a full plain diet. The patient is not allowed to get out of bed until he can take a full diet without discomfort. This will be usually four to six weeks. He then gets up and begins gradual exercise, the whole course taking from two to three months. I do not, however, advise this course of medical treat-

TABLE II.—OPERATIONS FOR RELIEF OF SYMPTOMS OCCURRING AFTER GASTRO-ENTEROSTOMY.

Case No.	Diagnosis.	Condition found.	Operation done.	Result and present state.
248	Biliary regurgitation.	Gastro-jejunal ulcer. Adhesions.	Not known.	Well, but died from cancer of prostate.
922	Lesion proximal loop.	Jejunal ulcer proximal loop.	Ulcer excised. Entero-anastomosis.	Recovered.
928	Delay and bile in stomach. Neurasthenia.	Jejunal ulcer.	Subtotal gastrectomy.	Doubtful improvement.
1521	Ulceration near stoma.	Ulceration completely surrounding opening. Upper abdomen mass of adhesions.	Partial gastrectomy.	Died.
1874	Ulceration duodenum or jejunum.	Two gastro-jejunal ulcers each containing silk.	Anastomosis re-formed.	Recovered.
365	Irritative diarrhœa, from delay distal to stoma.	Anastomosis twisted. Duodenum dilated.	Stoma closed.	,,
1340	Stoma not working properly. Bile. Delay.	Twisted loop between lateral anastomosis and stoma. Narrow pylorus.	Jejunum and stomach restored. Pyloro-duodenostomy.	,,
1659	Too much bile in stomach.	Kink proximal loop.	Entero-anastomosis.	,,
200	Duodenal lesion	Adhesions between stomach and gall-bladder.	Pylorus occluded.	,,
281	Too much bile.	Adhesions gall-bladder, pylorus, duodenum.	Pylorus occluded.*	Great improvement; maintained.
99	Too rapid emptying. Indigestion.	Distended duodenum.	Stoma closed.	Great improvement; working.
1316	Stoma not working. Superacidity.	No ulceration. Severe ileal kink.	Ileal adhesions relieved.	No immediate improvement.† Now better.
1396	Bile and too rapid emptying.	—	Entero-anastomosis.	Recovered.
670	Gastro-colic fistula.	Gastro-jejuno-colic fistula.	Parts restored.	,,

* Entero-anastomosis had been done formerly and was healthy. It appeared therefore that the bile must be returning through the pylorus.
† Reported ulceration of colon diagnosed.

ment as a necessary first step, as I should in a case of simple duodenal or gastric ulcer, for the reason that recurrent ulceration after gastro-enterostomy is frequently due to a suture at the junction, and no medical treatment can be expected to get rid of this. In all cases in which jejunal ulceration is suspected, unless the symptoms yield to a short course of medical treatment, operation is advised.

Persistent regurgitation of bile, if unrelieved by other means, generally ceases after anastomosis of the loops.

Operation is also advised in another class of case. This comprises patients in whom evidence of ulceration is not found, who are unrelieved by medical treatment based upon a careful investigation. If the condition for which the operation was performed appears to be quiescent and has remained so for a period of two years, I recommend such patients to have their anastomosis undone, provided that there is a free duodenal passage. Many of these patients are prone, as a result of their unfortunate experience, to regard surgery with suspicion, and it is difficult to get them to consult a surgeon again. But my experience is that in many such the cure lies in either mending mechanical deformities when present or in restoring the parts to their natural state. After a gastro-enterostomy has been undone the stomach may appear normal in all respects on the screen at early stages, and the former site of the stoma can only be recognised with difficulty at the emptying stage.

19

Shows a side-to-side anastomosis with rather long blind pouches of both ileum and colon: the former much dilated. This patient, with massage of the loop of ileum, a full diet and rest, lost her symptoms, which included sciatica, and put on a stone in weight. Four years later she became ill again and died of a volvulus caused by rotation of the loop and anastomosis.

21

Shows an oblique end-to-side anastomosis with a blind end to the transverse colon. The terminal part of the ileum was adherent to the proximal part of this pouch.

20

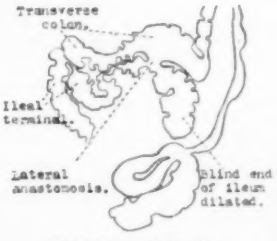


Diagram of Fig. 19.

22

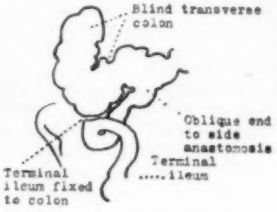


Diagram of Fig. 21.

23

From the same patient as Fig. 21. Shows the blind pouch distended with air and opaque residue which remained there for 72 hours after the rest of the colon was empty.

Results of Treatment.

The results of medical treatment in these patients are as follows: In two patients who came for investigation and advice we have not been able to find out what treatment was given or the result. Of the remaining 49 patients, 35 were treated medically. The results were:—

Recovered	14
Great improvement ..	13
Some improvement ..	4
No improvement ..	4

Surgical Treatment.

Fourteen patients have been treated surgically, and of these 9 are well, 4 are greatly improved, and 1 died. Table II. contains details of the diagnosis made before operation, of the findings at operation, and of the operation performed.

The patient (1521) who died had been operated upon in the first place for dense adhesions in the neighbourhood of the duodenum. Subsequent operations had taken place, including gastro-enterostomy, but his state had got worse and he could obtain no relief. More than one surgeon had refused to undertake his case again and the last operation was entered upon with full knowledge on his part of the risks.

At the present time in three patients who recovered completely without a second operation there has been some recurrence of symptoms and two others are dead, one killed on active service and one died of hour-glass stomach, operation having been refused.

It is clear, therefore, on consideration of these figures that the outlook of patients who are ill after gastro-enterostomy is by no means so depressing as is sometimes supposed. It is wrong to assume that little more can be done for them. With medical treatment more than half of these patients completely recovered or attained great improvement in their health. Of those who do not improve with medical treatment there is a prospect in many of being restored to complete health by further operation, assuming that every possible step has been taken beforehand to find out

what the disturbance is, in function or structure, of the parts concerned. In selected cases the results of a second operation are not merely good, they are brilliant.

It may be fitting here to make one remark about the feeding of patients after the operation for gastro-enterostomy. The work of Harvey and of Mann has shown that when the epithelium of one viscus is transplanted to another, changes occur at the junction which take months for their completion. It may be assumed that these cellular metamorphoses take place at the junction of the gastric and intestinal epithelium, and are in progress for a long period. It would seem wise, therefore, not to subject the patient concerned to the strain of a full diet until the mucous membrane has settled down to its permanent structure; also to avoid relishes, stimulants, oversmoking, and all known excitants of superacidity.

II. ILEO-SIGMOIDOSTOMY (5 CASES).

In one (52) the operation was done for life-long indigestion and constipation. The patient was admitted complaining of the same symptoms. With massage, diet, and rest they disappeared. In another case (244) the operation had been done for hypogastric dragging, flatulence, pigmentation, mammary lumps, and clammy skin. The dragging was relieved, but the other symptoms persisted. With medical treatment for superacidity, massage, and a suitable diet much relief was obtained. In a third case (77) the short-circuit was done for colitis with loose bowels of five years' standing. Intractable diarrhœa followed, which medical treatment failed to relieve, and which prevented any life but that of an invalid. A cæcostomy to wash out the blind colon gave some relief, but not enough. The ileum was then, on my advice, moved back from the sigmoid to its original situation at the cæcum, with much benefit. The patient is still subject to colitis, but leads a life of some activity. In a fourth case (144) the operation was done for œdema and melæna, a condition of pericolitis being found. Great benefit followed for three years, which was ascribed to the relief of toxic poisoning from intestinal stasis. A study of the plates shows that this was a case of diverticulitis. The operation relieved the inflamed area. The patient on admission was weak and easily tired. He had been working too hard, was restored again by rest, and has been performing his responsible duties for seven years since. In all these cases some material went from the sigmoid and remained over long periods in the blind colon, in one case as long as three months. There was also constant and considerable ileal stasis after the operation.

Ileo-sigmoidostomy and Resection of Colon.

The fifth patient had had diarrhœa for ten years, and at the age of 29 the ascending and transverse colon were excised and the ileum joined to the sigmoid. A granulomatous condition of undetermined nature was found in the lower bowel. On admission four years later he complained of diarrhœa with blood and mucus. The lower bowel was ulcerated and there was a tight constriction 1½ inches above the anus. Wassermann negative. Local treatment did but little good, and his doctor reported that he died two years later of cancer of the liver.

III. PARTIAL RESECTION OF COLON (9 CASES).

Operation had been done for constipation with neurasthenia, indigestion, or arthritis; indigestion with colitis or diarrhœa; headaches and vomiting; pain ascribed to a kink; abdominal pain of uncertain nature, and obstruction by adhesion.

One case (72) came for investigation only. The anastomosis appeared normal. The operation had cured the constipation, though the arthritis remained. In another (1387) the operation had relieved migraine and vomiting a little, but not much. Another (232) was resected for colitis and indigestion. Six weeks after the operation arthritis was noticed and has progressed steadily. She is now, eight years later, a confirmed invalid. Five cases showed a common feature on examination—namely, a blind loop of the ileum or colon, or both, which could be seen to become dilated, or to contract violently at the same time as pain was felt. Such pouches are, of course, completely obstructed at one end; they increase in length as time goes on. Of these, two have taken our advice and been operated upon again for removal of the loop (Figs. 17, 18, 19, 20, 21, 22).

Another patient had had the ascending and transverse colon removed for pain thought to be due to a kink. She was severely anæmic on admission. There seemed to be undue activity of small intestine near the anastomosis. Operation was advised and it was found that two loops of ileum were adherent to the abdominal wall. The patient is now much better and leading an ordinary life.

A study of the history, symptoms, and findings in these two small groups of operations upon the colon makes it doubtful whether more than two, or perhaps three, of them had such definite and severe disease of the colon as to justify the operation done. It is difficult also to avoid the reflection that the standard of examination and treatment carried out before the operation was not a high one. For example, to order pills or paraffin or fruit is not adequate treatment for severe constipation; and massage done blindly without X ray pictures showing the delay in the individual case, does not give the patient the best chance. Adhesions and deformities medical treatment does not remove, but it is rare to find a case of constipation without organic lesion that does not yield to a thorough régime. This criticism, which I believe to be a just one, we physicians must share with our colleagues the surgeons. Anyone who attempts to belittle one branch of the healing art as compared with another is a man of small range. Coöperation between the surgeon and physician is essential; it will not entirely banish unsatisfactory results, for all mortal measures sometimes go awry; but it will make them scarcer still.

It is hardly necessary to say that did time permit and were we not limited by the title of this paper, we could describe case after case from our records in which short-circuiting operations have been performed with happy results after a careful examination and a thorough trial of other methods of treatment. It is hoped that the analysis of some less fortunate cases may help in a small degree to add to the already large proportion of patients who are treated with complete success.

CONCLUSIONS.

1. About half the patients who sought relief after gastro-enterostomy recovered from their symptoms or improved greatly with lapse of time and suitable medical treatment.

2. In most of the remainder a detailed investigation showed abnormalities which are capable of relief by a further operation.

3. The conditions which call for a second operation are the persistent failure of medical treatment and inability of the patient to live a normal life: particularly if it can be demonstrated that bile is regularly in the stomach, or that the stoma is not in the lowest part causing accumulation of food between the stoma and the pylorus, or that the jejunal loops are not normal in appearance, or that there is dilatation of the duodenum and regurgitation of bile; or if there is evidence of ulceration in the neighbourhood of the stoma, or of active ulceration of the stomach or duodenum.

4. Except for structural disease, short-circuiting operations upon the colon should not be performed unless (i) suitable and persistent medical treatment has failed; and (ii) sound scientific reasons can be put forward for believing that the operation will benefit the patient.

5. In all cases of chronic alimentary disease treatment, and especially operative treatment, should not be undertaken until the case has been investigated as thoroughly as the circumstances permit.

(*Continued at foot of next page.*)

SALVARSAN-JAUNDICE:
ITS CAUSATION, INCIDENCE AND TREATMENT.

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IN a series of 1200 cases of syphilis treated at the Lock Hospital during the last three years, I found that there had been 64 cases of jaundice. With this amount of material I thought it might be of scientific interest to discover, if possible, some common factor or factors in the cases. I have also made a comparison of divers methods of treating the jaundice, and have drawn certain deductions therefrom. The cases fall naturally into four groups: (1) Jaundice occurring some time after a course of salvarsan,* 54 cases; (2) jaundice occurring immediately after injection or accompanied by a recurrence, 4 cases; (3) cases where no salvarsan had been used, 2 cases; (4) fortuitous jaundice, 4 cases.

Group 1.

Group 1 contains the cases which I believe to be true salvarsan-jaundice, and I purpose dealing with these in detail.

Percentage Incidence.—Four of the 54 cases were sent into the Lock Hospital suffering from jaundice from other hospitals. This leaves 50 jaundices in 1196 cases, which is nearly 4 per cent., and this may be taken as the average percentage, assuming that these 1196 are a representative batch of cases. I have had small success in obtaining jaundice percentages from other hospitals; in any case figures from general hospitals are open to the grave error that the average patient does not associate jaundice occurring weeks after his salvarsan course with either his disease or its treatment. Consequently he obtains treatment for the jaundice at the hands of one of the general physicians. This same objection is liable to invalidate the Army figures.

Ffrench[1] considers that the number of severe toxic cases following salvarsan is small. In most cases the jaundice is not a particularly severe disability. Hallam,[2] on the other hand, considers that the number of salvarsan jaundices is considerable. He quotes various authorities, and I confess that I have plagiarised freely from his paper without verifying in all cases, for I am quite sure that he has quoted correctly, and that he will forgive me for making use of his researches. Pulvermacher,[3] in April, 1919, records 16 cases, being 2·75 per cent. (i.e., in about 600 syphilis cases). Friedman,[4] in 1918, records 14 cases, being nearly 3 per cent. (i.e., in about 470 syphilis cases). Scott and Pearson[5] record 39 cases in 2243 syphilis cases (i.e., about 1·7 per cent.). These cases occurred at a military hospital. Hallam's[2] own figures show 27 jaundice out of 400 syphilis cases at the Royal Hospital, Sheffield. From other evidence in his paper I should be inclined to omit 10 of these, which gives 4·2 per cent. At the Royal Infirmary he records 20 out of 258. Here again I should exclude 4, which gives 6·2 per cent. Hallam quotes Harrison as having found 0·6 per cent. at Rochester Row. I am told that in the Rhine Army there have been over 8·0 per cent. of cases.

The factors in the problem are: (1) The drug, (2) the method, (3) the surgeon, (4) the disease, and (5) the patient. The purpose of this paper is to find, if possible, which are the noxious factors.

The Drug.

The salvarsan substitutes shown in Table I. have been employed. I have tried to work out the proportionate number of all syphilis cases in which each has been used. The approximate proportion is indicated by a percentage figure opposite each drug.

TABLE I.

(A) Drug used in	(B) percentage of all syphilis cases.	(A)	(B)
Novarsenobillon (May and Baker)	46	Silver salvarsan	4
Galyl	26	(No salvarsan was used in	2)
Combination of substitutes	12	Novarsenobenzol (Corbière)	1
Neodiarsenol	8	Neokharsivan	1
		Sulpharsenol	3

The actual number of jaundices following each drug is as shown in Table II.

TABLE II.

(C) Drug used in	(D) actual number of cases.	(C)	(D)
Novarsenobillon (May and Baker)	19	Silver salvarsan	3
Combination	16	Novarsenobenzol (Corbière)	3
Galyl	8	Neodiarsenol	1
		Cases from outside	4

In considering Tables I. and II. together, I came to the conclusion that the relatively large number of "combination-jaundices" was too high to be purely accidental, and that this was one of the possible potential causes of salvarsan-jaundice. From Table I. the proportion of novarsenobillon-treated to galyl-treated cases is approximately as 9 : 5—i.e., less than twice as many; from Table II. there are rather more than twice as many jaundices from billon as from galyl. The other drugs have been less used for a variety of reasons, and the small numbers make generalisations dangerous, but the high proportion of novarsenobenzol (Corbière) jaundices is difficult to explain except as directly due to the drug. I suggest various other factors in the course of this paper, but as it so happens none of the other factors enter into the Corbière cases. The silver salvarsan percentage is also high, but this may be influenced by the fact that in each of the cases one of the other possible factors is also concerned. None the less I was struck by the fact that, of all the drugs used, the two suspects are the most difficult to dissolve; this may have some bearing on their action in the body.

Summary.—It seems that the use of a combination of substitutes, or of a substitute which is difficult to dissolve, is a possible factor in the causation of jaundice.

The Method.

This includes means of administration, dosage, and periodicity.

Means of Administration.—We have not discovered any advantage in subcutaneous or intramuscular administration, and as they invariably cause a certain amount of discomfort their use has been discontinued. I can, therefore, express no opinion as to their effect on the incidence of jaundice. There remain two

* For the sake of brevity I shall use "salvarsan" as a generic term to signify all the arsenobenzene compounds of approximately the 606 or 914 formula.

(*Continued from previous page.*)

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methods of intravenous medication, a bulky, dilute solution delivered by gravity, and a concentrated solution delivered by means of a 10 c.cm. syringe. The proportion of gravity-given to syringe-given cases is as 1 : 2 approximately. This figure is obtained thus. Prior to October, 1920, the gravity method was used, subsequently the syringe method. There are almost twice as many syphilis cases in the series after October as there are before. The jaundice incidence is as follows: Gravity, 20; syringe, 28; both, 2; unknown, 4.

This seems to be definitely in favour of the syringe method, other conditions being equal. I am inclined to think that at each injection by the gravity method some of the salvarsan adheres to the wall of the tube and there disintegrates or oxidises, the toxic products being in due course swept into the vein of some subsequent patient, a circumstance quite possibly capable of determining a hepatitis in a case which might otherwise have escaped. This seems to be inevitable, however careful the technique, especially if one of the more viscid preparations is used.

Dosage.—A large dose of salvarsan—taking the patient's body-weight as criterion—usually makes the patient ill almost immediately after the injection, but this does not seem to be followed by jaundice, nor does jaundice seem to occur where the total amount has been large, due to an excessive number of injections. In a word, too much salvarsan leads to salvarsan poisoning—vomiting, prostration, pain, pyrexia, and possibly dermatitis, but not to salvarsan jaundice. Foulerton[6] says: "In the cases of delayed poisoning the symptoms have occurred *usually* after the completion of a course of treatment and when a *full amount* of the drug has been administered; but a precisely similar course of events may intervene during the course of treatment, and after the injection of only two or three comparatively small doses." This is borne out by the cases under review. I imagine that it usually occurs after a full amount because a full amount is given in the vast majority of cases.

Periodicity.—At the Lock Hospital injections are given normally at weekly intervals, so I am not in a position to suggest whether long or short intervals between injections are the less likely to be followed by jaundice. I am told that at one hospital, where a fair number of injections are given, the interval between injections is three weeks, and that they have never had a case of jaundice; at another hospital, where injections are given weekly and in greater number per patient, the jaundice incidence is also nil. It would seem therefore that the interval between doses is not a factor, provided that the intervals are regular.

The nearest approach to a factor common to all cases is this, that of the 50 Lock Hospital cases who developed jaundice, 24 received their injections at irregular intervals, or had received salvarsan at some previous period. Eight of the cases had attended irregularly for injections, but without any extensive break in continuity. The remaining 16 were either recurrent cases who had received salvarsan when first treated, or were cases where the patient had received one or two injections and had then failed to attend the hospital for a period of three weeks to six months, or had contented himself by attending for mercurial medication only, and had subsequently resumed salvarsan treatment. Four typical cases follow.

Two Courses.—Case 22, aged 43. Received a full course of galyl-cum-novarsenobillon without any ill-effect. Eighteen months later, as the Wassermann reaction was still positive, four small injections of novarsenobillon were administered at intervals of a week. Fourteen weeks later the patient developed a fulminating jaundice and was ill for two months.

Previous Course.—Case 11, aged 24. Army course of salvarsan at end of 1918. Recurrent syphilis, March, 1920. On the 13th, N.A.B. 0·6 g. Three further injections N.A.B., 0·9 g., one a week. Jaundice 16 weeks after last N.A.B. Six similar cases.

Irregular Treatment.—Case 23, aged 18. Primary syphilis, 1920, April 20th, N.A.B. 0·6 g.; May 11th, 0·6 g.; 25th, 0·6 g.; June 8th, 0·6 g. Small amount of salvarsan. Jaundice 13 weeks after last N.A.B. Seven similar cases.

Sensitising Dose.—Case 24, aged 29. Generalised syphilis, 1919, Dec. 9th, galyl 0·4 g.; 16th, 0·4 g.; 1920, Feb. 3rd, 0·4 g. Seven further injections of galyl 0·4 g. at seven-day intervals. Usual amount of galyl. Jaundice 7½ weeks after last injection. Seven similar cases.

This suggests that salvarsan is capable of "sensitising" a patient, and giving rise to a phenomenon akin to anaphylaxis. This is equally possible whether we consider the anaphylaxis as due to a previous sensitisation of the patient by means of the same toxin (salvarsan), or to an alteration in the physical state of the colloidal particles in the blood due to previous injection of a metal. I believe this to be the most important of the noxious factors.

Summary.—From the figures there seems to be a definite balance in favour of the syringe method. Dosage by itself does not seem to be a factor. *The previous administration of salvarsan, or irregularity in that administration, seems to be a decided factor.*

The Surgeon.

At the Lock Hospital the salvarsan injections during the last three years have been mainly in the hands of five surgeons; we have all had jaundices among our cases. Further, four cases were admitted to the Lock Hospital from elsewhere, suffering from jaundice—i.e., these cases had received injections not at the Lock Hospital, a fact which adds four other doctors to the list of possible agents in the 54 collected cases. Had most of the jaundices followed on injections administered by one doctor, I should have gone most carefully into his technique, but, as the jaundices at one hospital were more or less proportionately distributed amongst at least five men, I am inclined to rule out individual ineptitude as a cause.

I agree with Hallam[3] that in a large clinic cracked ampoules may be missed, distilled water contaminated, and so forth, but I think such accidents are far more likely to lead to vomiting, malaise with pyrexia, and possibly a transitory immediate jaundice, rather than to the remote jaundice which is the common type. As a case in point, I would cite an adventure that befell me about five months ago. Each dose of salvarsan is dissolved in a small glass bottle which has previously been autoclaved. On the day in question I started in a hurry, with the result that the bottles had not quite cooled down. Within two hours of completing the injections the waiting-room was dotted with patients being very sick. By the next day there were no untoward signs, and up to date none of them have developed jaundice.

Under the heading "surgeon" I include his staff. This introduces another complication, the possibility of maltreatment of the drug before use. Mr. Charles Gibbs suggested that I should work out the actual dates of injections in order to see whether there was any grouping. The result of this inquiry shows that out of the 50 cases, 11 followed injections given during the period November–December–January, 1919–1920, and 17 followed injections given during the period May–June, 1921. There seem to be three alternative explanations: (*a*) coincidence, (*b*) an infection as suggested by Hallam,[3] or (*c*) careless storage or handling of drugs. Seasonal incidence seems to be unlikely, for one series of injections was given during a rather cold winter, and the other during an exceptionally hot summer. Individual drug is ruled out, because several drugs were used concurrently, and jaundice did not follow one drug exclusively. The possibility of the existence of an infection similar to Weil's disease must be borne in mind, but as yet is "not proven." Careless storage was quite possibly the factor in the earlier series, for Mr. Gibbs discovered that the place where the salvarsan was stored was kept at a high temperature because of its nearness to one of the main hot-water pipes of the building. It is reasonable to suppose that keeping the drug at an undesirable temperature may so alter its constitution as to render it toxic—i.e., a jaundice agent. In two cases the drug was novarsenobillon, in three cases a combination was

used (galyl and neodiarsenol two, novarsenobillon and neodiarsenol one), in six galyl. Galyl was used in at least two-thirds of all injections given at that time.

The second group may also have been due to some insult to the drug. Hot-water pipes are excluded, but, on the other hand, all the drugs were kept in a room which probably reached an undue temperature during the very hot afternoons which occurred at the time. There was a still greater diversity of drugs used at this period: 2 cases followed after novarsenobillon, 1 after galyl, 1 after neodiarsenol, 3 after silver salvarsan,† 11 followed a combination of substitutes—no one drug was common to all combinations. Actually, I think, this series was coincidence, the coincidence being the extensive use of a mixed course at this time. I have, however, included the "group" cases under this head, as they are possibly caused by the surgeon or his staff.

Summary.—The operator does not seem to cause jaundice, but in so far as he is concerned in the storage of the drugs he must be considered as a factor.

The Disease.

Petrén[7] describes a condition of salvarsan poisoning following injections given in the treatment of influenza-pneumonia. The effects he describes are immediate, and I do not know whether any of these cases subsequently developed jaundice. In this series the disease is syphilis only. The stage of the disease, its activity or latency, mildness or malignancy appear to have no bearing on the subject. There are jaundices following treatment started at all stages of the disease. By no arrangement or grouping of my figures can I indicate one stage or type as more toxic than another. A recurrent syphilis by itself does not appear to predispose towards jaundice, unless the first attack was treated with salvarsan.

Summary.—The state of the disease is not a factor.

The Patient.

The success of treatment and avoidance of catastrophies can only be obtained by strict adherence to the rules. If the surgeon and the drug manufacturer abide by the rules, but the patient breaks them, disaster is almost inevitable. The complete mental hebetude of many of the patients leads them to a disregard of instructions—such, for example, as the orders to attend regularly for injections, and not to drink alcohol during the salvarsan course. If such rules are broken I believe that the possibility of jaundice is largely increased. In addition to this conscious antagonism to the surgeon, the actual state of the patient plays a part. Physical degeneracy, under-feeding, alcoholism, neglect, and insanitary surroundings almost certainly exaggerate the toxic effects of salvarsan or salvarsan plus syphilis. The worst cases I have seen have been in alcoholics. Factors which do not affect a well-cared-for, good specimen of a man seem quite sufficient to cause jaundice in a low type.

Summary.—Some men are intolerant of arsenic in any form, others can be rendered salvarsan-sensitive by previous injection of the drug. With these exceptions I believe that a strong healthy type of man is exceedingly unlikely to get jaundice. A weakly or degenerate type is likely to get jaundice as the result of any of the noxious factors.

Two other conceivable factors may be mentioned in passing. The administration of mercury, whether by pill, intravenous or intramuscular injection, concurrently with salvarsan medication, seems to play no part. I cannot find that the co-existence of gonorrhœa has any effect.

The Noxious Factors.

The facts enumerated suggest to me that the possible noxious factors are, in order of importance:—(1) A "sensitising" dose or course of salvarsan; (2) irregularity in intervals between injections; (3) use of more than one arsenobenzol compound in the same course; (4) storage of the drug in a warm place; (5) gravity method, unless a new rubber tube is used after every few injections; (6) relative insolubility of the drug; and that all these factors are rendered immeasurably more noxious if the patient be degenerate, uncared-for, or an alcoholic.

† Cf. Silver salvarsan in section "The Drug."

Time Incidence.

As shown in Table III., the majority of cases occur between the ninth and thirteenth weeks, so it would seem that this is normal "salvarsan-jaundice," and should not be described as delayed salvarsan-poisoning. The earlier cases may well be due to the result of the interaction of salvarsan and spirochæte, or of salvarsan and toxins liberated from the spirochætes which have been killed. Alternatively they might be due to As_4O_6 poisoning, the arsenious oxide arising from an inadequately "protected" drug or from a drug whose "protection" had been destroyed by some means.

TABLE III.

(A) = Time after last salvarsan injection. (B) = No. of cases.

(A)	(B)	(A)	(B)
18 weeks	1	8 weeks	1
17 ,, ...	2	7 ,, ...	4
16 ,, ...	2	6 ,, ...	2
15 ,, ...	1	5 ,, ...	1
14 ,, ...	2	3 ,, ...	1
13 ,, ...	12	2 ,, ...	1
12 ,, ...	6	10 days*	2
11 ,, ...	5	1 week*	1
10 ,, ...	6	Less than a week* ..	2
9 ,, ...	6		

* Early jaundice.

These early cases usually occur where the syphilis is showing signs of generalisation, where the amount of salvarsan is small and conceivably inadequate to compete with the infection, or where there is an alcoholic history, suggesting preliminary damage to the liver. Foulerton's[6] description of a war of attrition waged by arsenic-containing fat against the liver cells provides a ready explanation of the delay in appearance of recognisable signs.

Groups 2, 3, and 4.

Group 2.—In Case 44 of my series, jaundice occurred six days after the third injection with an exacerbation of symptoms. This was a case of late syphilis, and so seems to fulfil the criteria of the Jarisch-Herxheimer reaction, as described by McDonagh,[8] Cases 17, 28, and 32; in these three the jaundice came on after a full course, and was accompanied by a recurrence of the disease. Case 17 recurred seven days after the last injection, Case 32 ten weeks after. The jaundice and the recurrence synchronised accurately. I am inclined to attribute these cases to syphilitic hepatitis plus an inadequate amount of salvarsan, most of the salvarsan probably having been eliminated by this time. Case 28 might possibly be a case of late reactionary inflammation (Herxheimer reaction).

Male, aged 23, wretched specimen of a man; concealed chancre, phimosis, balanitis, profuse maculo-papular rash, anal and scrotal condylomata, ulceration of tonsils and fauces. Received 10 full injections of N.A.B. and neodiarsenol. Fourteen days after the last injection he developed severe jaundice, the chancre recurred, mucous tubercles appeared in the mouth, a nodular syphilide on the buttocks and lumbar region, and a discrete rupial rash on the back, chest, and legs.

These four cases seem to me to be analogous to those "earlier cases" mentioned in the preceding section.

Group 3.—Two cases occurred in patients who were undergoing mercurial treatment only. These may or may not have been due to the mercury. I suspect that their appearance was fortuitous.

Group 4.—Four cases in which the jaundice occurred at least 20 weeks after the last salvarsan injection of a moderate course, regularly given were, I think, in no way connected either with syphilis or its treatment. They seemed to be typical cases of simple catarrhal jaundice, ran a mild course, and the symptoms rapidly disappeared. Their time incidence seems to rule out salvarsan poisoning and their treatment to rule out syphilis. I think I have never

seen a case of true syphilitic jaundice, and Mr. McDonagh tells me that he has seen but two in 13 years.

Treatment.

Innumerable methods and all manner of drugs, including adrenalin, calcium chloride, sodium bicarbonate, sodium sulphate, sulphur orally and intramine intramuscularly have been used. Judging from results the only remedy of outstanding merit is intramine, which is in accord with Ffrench's[1] experience. In some cases the use of intramine was followed by no small amount of local discomfort. Mr. T. E. R. McDonagh has allowed me to use an improved sulphur preparation which he has lately devised. This new compound, which I understand is to be called "contramine," ‡ is the carbon-di-sulphide addition-compound of di-ethyl-amine, which can be given intravenously, an immeasurable advantage and obviating all local discomfort. As yet I have only had opportunity to try it on three cases. There were no ill-effects, local or general, after any injection, provided it was not made within two hours of food. If the patient had had food within this period he usually vomited a quarter of an hour after the injection. I have gained the impression from these three cases that "contramine" is likely to be more rapid in action than intramine. One case is worth quoting in detail.

CASE 18.—Male, aged 34. Recurrent syphilide penis and scrotum, and chronic gonorrhœa. June 14th, silver-salvarsan, 0·15 g.; June 21st, neokharsivan, 0·45 g.; June 28th, July 5th, 12th and 19th, neokharsivan, 0·9 g. Intramuscular injections of mercury concurrently. Oct. 18th, felt ill three days ago, has been getting worse, jaundiced; admitted to hospital. Is very yellow, liver slightly enlarged, urine bile-stained, motions loose, clay-coloured. Temp. 99·8°. Vomited. Very light, fat-free diet, sodium bicarbonate gr. 30 t.d.s. Intravenous contramine 10 c.cm. (0·25 g.). On the 20th, conjunctivæ less yellow, temp. 98°. Has not vomited since yesterday. Inj. contramine. On the 22nd, omit sod. bic.; inj. contramine. On the 25th, liver edge just palpable below right costal margin, body icterus gone, conjunctivæ, slightly tinted; stools firmer; urine practically normal, increase diet daily; inj. contramine. On the 30th, no signs, feels very well; on full diet; a little constipated; inj. contramine. Nov. 1st, left hospital at own request. On the 12th, "Quite fit; started work (chauffeur) on the 2nd." Jaundice, lasted 17 days. Treatment started on third day of illness. This was the worst case of jaundice in the series.

To substantiate my view that intramine is the most satisfactory individual drug to use, I have made a comparative table (IV.) of the duration of jaundice

TABLE IV.

Duration.	Intramine.	No intramine.
7 weeks and over	3	4
6 ,, ,, ,, ...	1	3
5 ,, ,, ,, ...	3	2
4 ,, ,, ,, ...	4	3
3 ,, ,, ,, ...	17	3
19–20 days	5	2
Less than 19 days	8	0

in intramine and non-intramine treated cases. No cases died, and all seem to have recovered completely, so the time factor seems to be the only available standard of comparison.

The intramine results are actually better than the figures suggest, as in several cases intramine was not used until the jaundice had been in existence for ten days or so. Intramine was given in 2·5 c.cm. doses intramuscularly at five-day intervals, contramine in 10 c.cm. doses (containing 0·25 g.) intravenously alternate days. In the cases which have come under my charge I have not used intravenous saline as suggested by Elliott[9] and by Willcox,[10] as I was not particularly impressed by the results obtained elsewhere. In only one case was it deemed necessary to perform venesection.

‡ The formula of contramine appears to be—

$$SNH_2\ (C_2H_5)_2\ CSN\ (C_2H_5)_2$$

its systematic name, diethyl ammonium diethyl thio-carbamate

CASE 13.—Temp. 104°. Headache, restlessness, insomnia, 300 c.cm. of blood withdrawn. Symptoms improved rapidly. Was treated subsequently with sodium sulphate, and tabellæ sulphuris. Large amounts of fluids. General measures. Detained in hospital. Jaundice lasted about eight weeks.

In the light of my present experience I should have treated this case subsequently with intramine.

Prophylaxis.

I would make the following suggestions with a view to obviating the occurrence of jaundice. Decide which arseno-benzol compound to use, and keep to that compound for any individual case. Give injections by means of a syringe, *at regular intervals* of a week. Half-way through the salvarsan course give one injection of intramine, and a second at the end of the course. There has not been a case of jaundice following salvarsan plus intramine given as described. This is not proof, but it is very suggestive.

If the patient has been treated with salvarsan previously, or has interrupted his course for a period exceeding three weeks, and it be decided to resume salvarsan, administer two injections of intramine, at an interval of five to seven days between injections, and a similar interval between the second intramine and the first salvarsan. One case seemed to disprove this.

CASE 35.—Recurrent syphilis. Treated some years previously. Two injections of intramine, ten injections of galyl 0·4 g. Jaundice six weeks after the last injection. The explanation is, apparently, that between galyl injection No. 2 and No. 3 there was an interval of three months, and no intramine was administered before the restart at injection No. 3.

General Conclusions.

I have quoted facts and figures with as great a degree of accuracy as my powers of observation and my capacity for grasping details permit. From these facts and figures I have drawn certain conclusions, but it is only fair to the surgeons who have helped me in the preparation of this paper to say that these conclusions are not necessarily accepted by any one of them.

Summing the whole matter up, I suggest—treat the liver as though it were an old lady of strong Tory views, intolerant of changes and any deviation from the normal course of events. If the patient be a miserable specimen do not hesitate to use salvarsan, preferably supplemented by intramine. If none of the rules are broken it is improbable that jaundice will arise. If it does occur, take the patient into a hospital or nursing home, supplement the general treatment with intramine, used at once and in full doses.

I am indebted to Mr. McDonagh for his help, and for permission to use "contramine"; to Mr. Charles Gibbs for valuable suggestions and criticisms; to Mr. Swift Joly for his assistance and advice on technical points; and to the other honorary surgeons of the Lock Hospital for permission to make use of their cases.

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LITERARY INTELLIGENCE.—Mr. Murray announces among recent publications the following books: "The Prevention of Malaria in the Federated Malay States," by Dr. Malcolm Watson; "The Interpretation of Radium and the Structure of the Atom," by Prof. F. Soddy; "Heredity," by Prof. J. Arthur Thomson, F.R.S.; "An Index of Symptoms, with Diagnostic Methods," by Dr. Ralph W. Leftwich (seventh edition, revised by Mr. H. Warner Collins); "Handbook of Physiology," by W. D. Halliburton, F.R.S., revised (fifteenth) edition.—Mr. Humphrey Milford announces the forthcoming publication of the collected papers of the late Prof. Wallace C. Sabine on Acoustics. Prof. Sabine was prevented by death from completing the work on this subject commissioned by Harvard University Press.

TWO CASES OF MALFORMATION OF THE KIDNEY IN INFANCY.

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AND
ERNEST H. SHAW, M.R.C.P. LOND.,
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THE following is a brief record of two interesting cases of the above nature which have appeared in our hospital practice during the past two years.

CASE 1.—B. L., aged 14 months, a full-time baby weighing 8 lb. at birth. Congenital malformation of the ureters and bilateral hydronephrosis, upon which was superimposed a *B. coli* infection. Admitted to hospital with history of recurrent vomiting and wasting since birth. Every kind of diet had been tried without effecting any definite improvement in the general condition. Picture, as presented on admission, of obstinate infantile dyspepsia; the baby was fretful, the abdomen distended and hard; stools pale, undigested, and sour-smelling. The urine slightly offensive; marked emaciation, the weight being only 11 lb. 9 oz. A fortnight before admission a small quantity of bright red blood had been passed per rectum on one or two occasions.

On Examination.—Abdomen difficult to palpate, owing to its abnormal distension and hardness; in left iliac fossa an elongated sausage-shaped tumour, which suggested at first sight thickened pelvic colon or a chronic intussusception. The urine contained a quantity of pus cells, and on cultivation a growth of *B. coli* was obtained. The pulse, temperature, heart, lungs, and other systems were normal. A few days after admission typical *B. coli* rigors took place, and a moderate degree of temperature persisted despite treatment until death. So far the case, with the exception of the indefinite tumour in the left iliac fossa, had appeared to be one of defective digestion and mal-assimilation associated with a *B. coli* pyeletis. Five weeks after admission, however, the infant began to vomit all feeds, became dyspnœic and drowsy, and very shortly passed into coma and died.

Post Mortem.—A condition of bilateral hydronephrosis was shown, with marked dilatation and convolution of the ureters, which were duplicated on either side. The elongated tumour felt during life was an enormously dilated and tortuous left ureter. The kidneys, ureters, and entire bladder were removed and submitted to a further dissection, an account of which follows:—

The kidneys were enlarged, the left being 3½ in. long, and the right 3¼ in. The hilum of the left organ was large, and emerging from it were two pelves which were prolonged downwards as two separate ureters; the latter formed wide thin-walled tubes, pursuing a tortuous course to the back of the bladder. Just outside the bladder wall the ureter which sprang from the lower half of the kidney tapered away to a narrow vessel and entered the dilated end of the other ureter; the single tube then pierced the bladder wall and opened at the summit of a rounded cyst-like body which projected into the vesical cavity on the left half of the trigone. This opening was in the form of a small slit about one-eighth of an inch long. Fluid could be expressed from both ureters through these small openings. Viewed from above the pelves were dilated and the calyces greatly enlarged; the lining membrane was smooth, while a thin layer of kidney tissue formed the capsule of this large collection of cyst-like cavities. The upper pelvis and its calyces were separated from the lower ones by a thin septum of kidney tissue. The right kidney presented an exactly similar condition to the left, except that the ureters were rather smaller and less convoluted. The openings of the ureters on the cyst-like prominences in the bladder were valvular, the lower lip of the orifice projecting beneath the upper, so that pressure within the sacs would cause the lower wall of the opening to bulge upwards and obstruct the flow of urine into the bladder. The bladder itself was a little enlarged and the wall thickened, especially at the fundus. The urethra was wide and unobstructed, but the right ureteral sac tended to bulge over the orifice. The wall of the urethra itself was thickened.

CASE 2.—This case is somewhat similar. L. B., a female infant, aged 7 weeks, was brought to hospital for an apparently mild attack of diarrhœa and vomiting, was treated and referred to out-patients, and on the following day died quite suddenly.

Post Mortem.—A condition of widely spread œdema of the whole body was shown. On opening the abdomen both kidneys were found to be slightly enlarged, both exhibiting a moderate degree of hydronephrosis, the pelves and calyces being widely dilated and the kidney tissue reduced in each instance to a narrow belt one-quarter to one-third of an inch in diameter. From the upper pole of the right kidney there arose from a narrow orifice a widely dilated and convoluted ureter an inch in diameter. This ureter ended blindly in the right side of the bladder wall. From the pelvis of the same kidney a moderately dilated and tortuous ureter descended and opened normally into the bladder.

Diagram to illustrate Case 1.

From the left kidney a similar malformed ureter arose normally from the pelvis and presented a normal ureteric orifice in the bladder. The wall of the latter was distinctly thickened and hypertrophied. No signs of obstruction could be detected at either opening of the ureters or at the urethral orifice. Sections of the kidney tissue showed no abnormal changes.

Remarks.

It is not easy to explain the pathological changes observed in these two cases. There is a congenital malformation present, but the causation of the dilatation of the ureters and hydronephrosis is not so apparent. At first sight it would appear that the obstruction must lie at the ureteric orifice, but in both cases, with the exception of the ureter which ended blindly, the openings were large enough to allow of a free passage of the urine. In the first case, with its cyst-like prolapse of the ureters into the bladder, the valvular nature of the orifice caused by the prolapse may have been sufficient to check the flow of urine. But it must be remembered that this prolapse was itself secondary to either obstruction at the ureteric orifice or lower still. Again, in both cases the bladder was thickened, indicating the possibility of some obstruction to the out-flow through the urethra. In both cases, however, the patient was a female, and the short urethra was widely patent, and there was no sign of the obstructing flap of mucous membrane described by some writers. Torsion of the greatly convoluted ureters hardly seems a satisfactory cause, and the possibility of congenital hypertrophy of the muscles of the bladder compressing the ureteric orifices seems little better. If none of these causes are operating we are left to presume that there must be some incoördination of muscular action causing spasm of the urethral orifice. Such a condition would be comparable to the spasm seen in pyloric stenosis or in the obstinate constipation resulting in or from Hirschsprung's disease—i.e., congenital dilatation of the colon.

Since writing these notes our attention has been drawn to a paper by Dr. John Thomson,[1] in which he classifies this condition with congenital pyloric hypertrophy and hypertrophy of the colon.

[1] Brit. Med. Jour., 1902, ii., 678.

IMPETIGO CONTAGIOSA AS SEEN IN SCHOOLS.

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Impetigo contagiosa, commonly known in boarding schools as "Scrum Pox," is a very highly contagious skin disease, affecting chiefly the face and scalp, but at times spreading to other parts of the body and to the limbs. Bacteriological investigations seem to point to the primary infection being streptococcal, but by the time treatment is sought staphylococci are often predominant, chiefly *S. aureus*. In many cases the organism is introduced into an abrasion or laceration, but sometimes this is not evident, and careful observation reveals a small pimple capped by a still more tiny vesicle, which enlarges rapidly and eventually gives rise to the characteristic honey-coloured lesion. In some cases the disease is inoculated into acne spots from which the top has been scratched, and not infrequently impetiginous and pustular spots coexist side by side. One fact is certain—viz., that infection is introduced from without, and a common source which does not receive due recognition is the hair and scurf.

Infection during Football.

When the scalp is scurfy and the hair allowed to grow too long, and especially if it is treated with pomades, it acts as a germ-trap, and, when rubbed against an infected face or jersey in a football scrummage, it likewise becomes infected. In such cases, if the face—especially the folds between the ears and the temples—are not washed *after the hair is brushed*, a layer of infected scurf is deposited, and a slight tear of the ear, such as is very common in football, gives the germ an easy port of entry into the superficial layers of the skin. This causes irritation, and leads to scratching, and an ample supply of streptococci finds its way under the finger-nails, sometimes causing a whitlow, and frequently giving rise to further spots by direct inoculation of the skin of the face. Shaving, especially with a blunt tearing razor, often prepares the way for inoculation from the spots, scalps, or jerseys of other players. It would be well to abstain from shaving within 12 hours of a football match.

In days when less attention was paid to hygiene, the disease was, no doubt, spread by the use of common towels and sponges. It is not at all uncommon to find a localised outbreak following a football match, due to the presence of one boy suffering from a single unrecognised spot; hence it is most important that, in a school, every spot which looks in the least suspicious should be shown to the medical officer so that he may segregate the infected person. It is also most important that, during football terms especially, schoolboys should be made to wear their hair short and have their scalps regularly washed or shampooed; they should be taught to begin the morning toilet by brushing the hair thoroughly, and after that never to omit vigorous washing of the face, especially around the ears, with soap and hot water. Special attention should also be paid to the finger-nails, which should be kept cut short and scrupulously clean.

Predisposition and Treatment.

Certain individuals and certain ages are, no doubt, especially prone to impetiginous infections. Some persons suppurate with the least provocation, especially during the damp, sunless months of the year when the skin does not act so freely as it does in summer, and impetigo is very common amongst adolescents. In spite of this, the disease is preventable to a large extent; regular hot baths with a liberal use of soap and vigorous rubbing with a rough towel is a necessary precaution. There is no disease so capricious in its response to treatment; remedies which suit one patient fail with another. Removal of the crusts and application of dilute nitrate of mercury ointment, if carried out regularly and antiseptically, is usually all that is necessary, but in some cases these remedies fail, and no sooner is one spot cured than another appears. Early application of iodine (2 per cent. in S.V.R.) often aborts the development of a spot. Some lesions are best kept undisturbed and dry throughout, whilst in many cases a most efficacious remedy is the application of weak lysol or boric fomentations, keeping the part well covered.

Constitutional measures must not be neglected, including regular exercise; the diet should include a liberal supply of fresh milk, butter, green vegetables, and ripe uncooked fruit. Of medicines, cod-liver oil and iron, extract of malt, and aperients containing sulphur are the most efficacious, whilst a short stay at a bracing seaside resort will often turn the scale in favour of recovery, even in most obstinate cases. Vaccine treatment is sometimes most efficacious, especially a mixed vaccine containing streptococcus and mixed staphylococcus strains. Injections into the muscles of colloidal manganese have been used by some with good effect.

In conclusion, I would advocate that the disease be tackled in schools by a careful common-sense but strict attention to toilet, especially of the hair and scalp and fingers, and by immediate and compulsory notification of every suspicious spot to the medical officer.

OBSERVATIONS ON AN EXTENSIVE HUMAN INFECTION BY SARCOPTIC MANGE OF THE HORSE.

BY R. A. S. MACDONALD, B.SC., M.R.C.V.S.

THE circumstances of this outbreak are peculiar, though not entirely unprecedented. A class of veterinary students was engaged upon the performance of post-mortem operations on a horse. The horse had a history of generalised sarcoptic mange, the disease having gained such a hold that it was considered an unsound economic proposition to proceed further with treatment. It was destroyed one Saturday morning at 10 A.M. and thereafter was left lying upon a concrete floor while the students in question palpated, dissected, and operated upon the carcass for a period of time which varied with the individual from two to five hours.

Contact.

Of the students who had any contact with the carcass in question, approximately 53 per cent. became infected. On the other hand, the non-infected individuals were either those who were engaged upon the head and neck (which parts had been cured by the previous treatment) or those who had been little more than onlookers, in that they had been engaged in swabbing incisions, &c., to assist the actual operators. In short, of these students whose hands and clothing came into direct and prolonged contact with the infected carcass 100 per cent. complained of subsequent symptoms.

Symptoms.

The most constant symptoms common to every case were:—

(*a*) Itch of a most pronounced and continuous nature, accentuated by surface warmth, induced by exercise, by lying in bed, and by friction in the process of inunction of the affected areas.

(*b*) A papular eruption. This was present in all the affected cases at the site of contact with the carcass—i.e., forearms, ankles, and calves of the legs. The hands in most cases, though not in all, escaped infection, no doubt owing to washing with carbolic soap immediately after, or in some cases during, the work on the dead subject. In some cases the forearms escaped while the ankles were affected or vice versa. Lesions on the shoulders, upper arms, trunk, and thighs occurring in some of the students were in all cases secondary, there being no direct track of infection on the skin. The papules were the size of a large pin's head, of a fiery-red colour, and were very slightly elevated above

the surface of the surrounding skin. They seemed to correspond to hair-follicles, and the crops were luxurious. It is perhaps significant that in Case A (referred to later) the interdigital spaces were the seat of the infection; here also the papules were more circumscribed, more elevated, and slightly pointed.

Treatment.

From the strictly scientific point of view it may be regarded as somewhat unfortunate that the affected individuals were all well versed in the life-history and pathogenicity of *Sarcoptes scabiei*, and that the morbid conditions were therefore rapidly recognised, and curative measures taken accordingly. It might be noted here that the sooner the infection was realised the more easily was a cure effected. Thus, in B's case, after two hours' work on the carcass he became aware of an intense itching on the right forearm, with some slight hyperæmia of the part. He at once painted the area with weak tincture of iodine and had no further trouble at that point. Eight hours later similar lesions appeared upon the calves of the legs. Tinct. iodin. was again applied and the eruption disappeared in one day. Case C became aware of infection before leaving the establishment at 1 P.M., but considered the violent itch to be a form of scabiophobia. At 2.30 P.M. he examined the lateral aspect of the calf (an area of contact with the carcass) and found the cause of the itch to be the typical papular eruption. He at once took a hot bath and scrubbed the affected area for some minutes with a stiff nail-brush. The area was dressed with 1 in 10 sulphur ointment until two days after infection, by which time the irritation had disappeared, although the eruption did not entirely subside until two days later. Case A itched during the first day and only awoke to the situation on the second day. He became ultimately affected with the typical papular eruption in the interdigital spaces, all over the arms, as well as almost all over the legs. This is one of the few cases with sequelæ.

The treatment adopted varied in detail but, generally speaking, consisted in scrubbing the whole body and especially the affected areas in a hot bath to which was added some coal-tar disinfectant or washing-soda. This was followed by inunction with a preparation in which sulphur was the chief ingredient, adjuvants being salicylic acid, ammonium sulphide, ol. picis, &c. The presumably infected clothing was in most cases cast off at once pending disinfection. In connexion with the latter point one notes that Cases D and E report no trouble on the Saturday of infection nor on the following Sunday—when different suits were worn—but on the Monday, when the suits worn on the Saturday were resumed, they became typically infected. Case F applied pure creosote to each papule with the aid of a match-stick. This treatment relieved the itch but had no effect on the eruption, and on the Wednesday he fell into line with the hot scrubbing and sulphur applications.

Sequelæ.

A few cases reported a slight dermatitis which was relieved by the use of ordinary emollients such as ung. zinci. Case F seems to have induced a pustular dermatitis. These dermatites were doubtless due to the enthusiastic scrubbing and inunction. Case A is of special interest. After spending three days in bed in a state of acute discomfort (all the while treating himself with a sulphur ointment) he developed a diffuse dermatitis which affected all parts of the body, including the face. This was succeeded by a pompholyx due to a streptococcal infection from which he was still suffering more than three weeks after the incidence of the infection. In this case there is also a history of an attack of scabies during infancy.

Microscopy.—The carcass was scraped on the Sunday morning—i.e., 24 hours after death. *Sarcoptes scabiei* were found to be present in abnormally large numbers.

One concludes from the above observations that the mites migrated from a killed and chilling equine host to human hosts, passing through the clothing with little delay and setting up irritation in a period varying from 2 to 24 hours.

FURTHER EXPERIENCES WITH THE SCHICK TEST.[1]

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AND
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(*From the Wellcome Physiological Research Laboratories.*)

THE work included 1150 tests. One group of 160 medical students contained only 56 "negative reactors" to the Schick test, giving the low rate of immunity of 35 per cent.; amongst 22 nurses in the same hospital, only 45 per cent. were immune, whereas in a hospital staff of doctors, nurses, and attendants, consisting of 182 adults, 78 per cent. were immune. Zingher in New York noted that the higher the social stratum, the lower the immunity rate; the apparent explanation is that the wealthy protect their children from infection and therefore from natural active immunisation, while the poor cannot do so, and their children must either develop immunity or succumb to the disease. In a group of 734 children in an institution where diphtheria had recently occurred, 534 were immune—i.e., 73 per cent. Amongst the whole 1150 persons only 7 "positive (and pseudo)" or "combined" reactions were met with. The immunity rates at various ages agreed with those previously published. Amongst the children in the school blocks in which diphtheria had occurred, the immunity rate was not on the average higher than in other non-infected blocks. Children from the various blocks mingled in play. It was generally found that brothers and sisters gave the same reaction, and that if the younger were negative the older were also negative. Amongst 87 families, in six families all the children gave a positive reaction; in 51 all were negative; while in 13 families the older children were negative and the younger positive. "Zingher's law" was contravened in 16 families, where the younger were negative and the older positive.

On this point our observations are not of great value, since brothers and sisters are divided amongst various school blocks at an early age.

The error involved in making a decision 24 hours after the test was about 5 per cent. Amongst 238 children, records were made of the first day's reading and of subsequent readings. In 10 the negative reading, made on the first day, became later positive—i.e., these were delayed reactors. In 0·5 per cent. an initial "positive" proved later to be "negative." Four hundred and ten children were examined on the second day and again at a later date; three children—i.e., 1 per cent.—who were recorded as negative on the second day, later developed positive reactions. Thus if an epidemic occurs in a school, it appears to be practicable to apply the Schick test to all the inmates, and next morning to decide with a 95 per cent. accuracy who are positive reactors and need passive immunisation or careful daily examination, until active immunisation can, if desired, be carried out.

The error of the test is very small; if readings can be made on several different days, and in the rare doubtful cases the test, repeated, an accurate decision can be arrived at in practically 100 per cent. of cases; if one is able to titrate the blood in the fractional percentage of cases that still cause some hesitation, the percentage of accuracy will reach 100. In practice it is very easy to read accurately about 95–98 per cent. of patients, but the remaining few persons demand careful examination. Nearly always when one is in doubt the patient is really immune. The readings in 24 cases in the whole series of 1000 cases caused some difficulty. In 23 of these the final readings of the repeat Schick test as well as the blood titration showed that the patient was immune. Eleven samples contained between 1/10 and 1 unit per c.cm., 11 contained

[1] Abstract of a paper read at a meeting of the Section of Pathology of the Royal Society of Medicine on April 4th.

more than 1 unit. From 43 medical students blood samples were obtained by venipuncture at the same time as the Schick test was done. Twenty-seven gave a positive Schick response and no antitoxin was found in the blood; 13 gave negative reactions and the blood in every case contained more than 1/30 of a unit of antitoxin per c.cm., eight of the samples contained between 1/10 and 1 unit, while one contained 5 units. Three of the samples are still under investigation. People who have previously had diphtheria may give a negative or positive response to the Schick test. In the Mitcham work, 16 out of 19 children who had had diphtheria gave a negative Schick response; in the recent work were two small groups of adults. In one group of 13 adults, nine—i.e., 70 per cent.—were immune, while in a group of 23, only six—i.e., 26 per cent.—were immune.

In carrying out the active immunisation of adults, one must proceed very cautiously. A doctor, subject to migraine and known to be very sensitive to serum, gave a marked early reaction to the Schick control. The obvious indication was to make the first dose of prophylactic very small. 0·01 c.cm. was given, the doctor had a very sore arm for two days and was distinctly unhappy; a week later 0·02 c.cm. was given: he had an arm that was uncomfortably painful for two days and suffered very severe malaise. This is of course an extreme case. Initial doses of 0·05 c.cm. or even 1 c.cm. of the same mixture have been given by us to children and young adults without causing any discomfort. Fortunately, children practically never develop severe reactions.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

BONE GRAFTING.

A MEETING of this section of the Royal Society of Medicine was held on April 5th, Mr. C. A. R. NITCH, Vice-President, being in the chair.

Mr. C. MAX PAGE read a paper by himself and Mr. G. PERKINS on Some Points in the Technique of Bone Grafting (with special reference to "Bridge Grafts"). He said that some parts of the life-history of bone grafts remained obscure. There was still a question whether the graft survived or merely acted as a scaffolding, in which new bone was laid down by ingrowth from the host tissues. As the result of their experience of 50 bridge-graft cases—i.e., cases in which a gap in the host bone was made good by a graft—they concluded that the graft retained its vitality when successfully implanted. In support of this X ray plates were shown in which a graft was throwing off sequestra within three weeks of implantation. Further, boiled beef-bone, which should be equally useful as scaffolding, was not, in their hands, nearly as successful as autogenous bone grafts. In one case, in which boiled beef-bone was tried, it remained unabsorbed and was removed 16 months later from a cavity lined by fibrous tissue, while the host bone remained ununited.

For successful bridge grafting, the graft should be autogenous in origin. The most satisfactory source of the graft for average purposes was the tibia. The graft should contain a sufficiency of compact bone to give it strength and as much cancellous bone as was convenient. It was in relation to the cancellous part of the graft that firm union with the host bone took place, and that new bone was laid down after implantation to thicken the graft. The presence or absence of periosteum on the graft would not appear to affect its vitality initially or its later enlargement in response to function.

Two steps were necessary in the preparation of the host fragments: (*a*) The removal of the sclerosed ends till healthy vascular bone was exposed. (*b*) Mobilisation of the fragments so that they could be brought into their normal alignment without tension. The most important factor governing success was the firm fixation of the graft to both extremities of the host bone, and the method of fixation of the graft found most satisfactory for the average case was by intramedullary pegging at one end and by an "inlay splice" at the other. They avoided, whenever possible, even catgut or kangaroo tendon.

Fractures of a bridge graft fell into two categories: (*a*) Apparent fracture at the junction of the host and graft; these fractures occurred at an early stage and were due to the weakening of the implanted part of the graft by the absorption which resulted when it was not in firm contact with a healthy section of the host bone. This was the first indication of failure of the graft. (*b*) Fractures in the free part of the graft which occurred from inadequate support of the limb or its exposure to undue strain after the implanted ends of the graft had become firmly incorporated with the host bone. Union of these fractures sometimes occurred.

Post-operative treatment was divided into three clinical stages: (*a*) During the first six weeks absolute immobilisation of the part involved was necessary; during this stage the graft should unite firmly with the host bone. A radiogram taken at this period would show whether or not the graft was successful; if implantation of the graft had been so carried out that vital continuity between it and the host bone became established, no space was to be seen between the graft and the host bone in the picture; if fixation had not been firm a clear area would be seen between the graft and the host bone; the related part of the graft would become gradually absorbed and would finally give the appearance of being fractured at its point of contact with the host bone. (*b*) After six weeks, partial function of the limb involved was allowed, adequate splint support being supplied to prevent fracture from undue strain. (*c*) When in response to function the graft had sufficiently thickened, all support was removed, and the return of full nutrition and activity in the limb was assisted by physiotherapy—massage, exercises, &c.

The ease with which successful bridge grafts could be carried out varied in different bones. The radius gave the largest proportion of successes. The upper third of the ulna and the lower third of the tibia were found to be the most difficult to bridge. They attributed most of their failures to unsatisfactory fixation of one end of the graft to the host bone. In their experience post-operative infection of the wound was not incompatible with the survival and growth of a bridge graft.

Discussion.

The PRESIDENT inquired whether Mr. Page employed an Albee saw for cutting the graft or whether he employed a hand-saw. He had heard that some failures in bone-grafting operations had been attributed to the use of the former, owing to its generating so much heat as to kill the osteoblasts in the graft. He also inquired whether Mr. Page performed the operations in one or two stages: and he added that the X ray appearances of some of the cases of fracture of the graft closely resembled septic caries.

Mr. P. J. VERRALL agreed with nearly all Mr. Page's conclusions, and especially that mild sepsis did not cause failure in bone grafts. In cases where unexplained failure of grafts had occurred by a process which he termed aseptic digestion, the Wassermann reaction had proved to be positive. For bridge grafts of the humerus he had found the fibula admirably adapted as an intramedullary peg, since it was of just the necessary size to make a tight fit without any carpentry. He had found that the upper two-thirds of the fibula might be removed without doing any serious injury to the leg or the ankle-joint. The fibula might also be used to replace the upper part of the humerus when the upper part, including the head of the latter bone, was removed for a myeloma. The biceps cruris tendon could then be made use of as a point of fixation for the biceps

brachialis. He agreed that the prognosis for a bridge graft was worst in the ulna, and suggested that this might be due to the subluxation of the upper end of the radius often associated with non-union of the ulna. It was therefore most important in these cases to fix the arm in full supination. He expressed some surprise at the early date at which Mr. Page permitted even restricted movements after a bridge graft operation.

Mr. PAGE, in reply, said that he employed an Albee saw, which, properly irrigated, did not affect the vitality of the graft. He very rarely operated in two stages, as he found that the infection of old war wounds was now dying out. He thought that Mr. Verrall had possibly found the cause of some of his failures—he had unfortunately omitted to have the Wassermann reaction performed in his unsuccessful cases. He had no personal experience of the use of the fibula as a graft.

MANCHESTER PATHOLOGICAL SOCIETY.

A MEETING was held on March 15th, with Mr. J. HOWSON RAY, the President, in the chair, when Mr. W. HOWARTH read a paper on

The Newer Methods of Pathological Investigation.

He demonstrated the methods of estimating blood-sugar and blood-urea, and also the estimation of urinary urea chlorides and phosphates, making references to the clinical application of the tests and their value in different conditions. This was followed by the diastase test, and those for the body alkali reserve. Mr. Howarth drew a distinction between the salt-retaining and the protein-retaining types of nephritis, and demonstrated the different results obtained by various tests in the two conditions.

Dr. G. J. LANGLEY followed with a discussion on the value of these and other laboratory tests to the practising physician. He had found the urea-concentration tests of great value, and in cases of chronic nephritis intractable to medical measures was attempting to find in these and other urinary tests some standards which would indicate decapsulation. He referred to a case of renal glycosuria in which the blood-sugar test had enabled him to make a correct diagnosis.

Dr. OLIVER stressed the value of the various urinary tests, and commented on their use in helping to elucidate the very confused pathology of nephritis. He supported Mr. Howarth's remarks on the paramount importance of blood-sugar estimations in diabetes, and pointed out that the disappearance of sugar from the urine of diabetics did not constitute cure, as these sufferers had still a high blood-sugar figure. He had found the constant checking of the blood-sugar an invaluable aid in the dieting and general treatment of diabetics.

Mr. J. B. MACALPINE restricted his remarks to the estimation of blood and urinary urea in urinary surgery. He had found the tests of the greatest possible value, and would not like to return to the old days when one operated on these cases largely in the dark as to their renal function. The chief field for these estimations lay in the ordinary prostatic enlargement. The speaker never operated upon these cases until he knew the functional condition of the kidney, and had had excellent results from this procedure. Although no test as yet will tell how much the precise anatomical damage is, he placed most reliance on the blood-urea test. The crude dye-excretion methods, quantitatively estimated by the cystoscope, he thought fallacious.

Dr. J. H. DIBLE thought Ambard's Constant a useful criterion, and believed people were blinded to its value because of its rather formidable formula. The President, in congratulating Mr. Howarth on his demonstration, called attention to the fact that Mr. Howarth would be glad to receive material for investigation from all who cared to send it to the Department of Pathology at the Manchester University.

Reviews and Notices of Books.

THE GLANDS REGULATING PERSONALITY.

A Study of the Glands of Internal Secretion in Relation to the Types of Human Nature. By LOUIS BERMAN, M.D., Associate in Biological Chemistry, Columbia University. New York: The Macmillan Company. 1921. Pp. 300. 18*s*.

THROUGH 291 breezy vigorous pages the author preaches his belief that man is regulated by his glands of internal secretion. The pages are, perhaps, rather many for what he has to say, but most people will enjoy reading them as much as the author must have enjoyed the writing. His gay zest in his subject gives a presentation which is always bright and sometimes brilliant, and his account of the discovery of what we know of the endocrine organs, especially perhaps the narrative of Brown-Séquard, will please even those who ask for established facts and prim deductions, and who disapprove of the imaginative induction on which Dr. Berman bases his case. The thyroid is the creator of the land animal, the gland of energy production and mobilisation; the pituitary the gland of energy consumption, the regulator of organic rhythms, the præpituitary governing the growth of connective tissue, the post-pituitary the tone of nerve cell and muscle. The suprarenal is the gland of combat and emergency; the secretory cells of the pineal gland determine maturity; the thymus dominates childhood and retards maturity; the interstitial cells of ovary and testis determine secondary sex characters; the parathyroids control calcium metabolism and neuro-muscular excitability, and the pancreas with its "insuline" regulates sugar metabolism. The influence of these glands on character and conduct is comparatively simple to illustrate when taken one by one. "The womanly woman and the manly man, those ideals of the Victorians, which crumbled before the attacks of the Ibsenites, Strindbergians and Shavians in the nineties, are the masterpieces of the interstitial cells in their perfection," says Dr. Berman, adding that the thyroid-centred type has "bright eyes, good clean teeth, symmetrical features, a temperamental attitude towards life, a tendency to heart, intestinal and nervous disease," while adrenality involves being "hairy, dark, masculinity marked, tendency to diphtheria and hernia." But when it comes to the interlocking directorate, without which few American organisations seem complete, the permutations and combinations of relative supremacy and subordination provide such an endless series of possibilities that we long, as we read, to come to the ordinary human being. "People say I am common," said Abraham Lincoln; "I think God must be fond of common men for he has made many of them": Dr. Berman's world seems to contain rather few, or perhaps it is that he has not found them very interesting. Here is his characterisation of a set of girls:

> "Alicia may be hyperthyroid, and so excitable, nervous, restless, and subject to palpitation of heart and sleeplessness. Bettina may have too much postpituitary, and so will menstruate early, tend to be short, blush easily, be sentimentally suggestive and sexually accessible. Christina may be adrenal cortex centred and so masculinoid: courageous, sporty, mannish in her tastes, aggressive towards her companions. Dorothea may have a balanced thyroid and pituitary, and so lead the class as good-looking, studious, bright, serene, and mature. Florence, who has rather more thyroid than her pituitary can balance, will be bright but flighty, gay but moody, energetic; but not as persevering."

Illustrations of the endocrine analysis of character and conduct are drawn not only from contemporary careerists, defectives and cards, but from a series of historical personages, and thus an interesting chapter is filled. Darwin had a hyper-functioning pituitary, the anterior part dominating the posterior, too much

thyroid, and too little adrenal. Napoleon was pituitary-centred with antepituitary superiority, an excellent thyroid and a superb adrenal, and it was pituitary failure which produced the fat old gentleman of St. Helena. Florence Nightingale was another pituitocentric, and with the gland's failure she underwent transformation from the acrid, thin, and keen reformer, who never gave nor took an excuse in her pitiless and unscrupulous pursuit of her ends, to the amiable, fat, and dull old lady who smiled all day long.

In his title and afterwards the author draws no pedantic terminological distinctions. Personality, character, make-up, conduct, nature, habits, body, soul, and spirit are the same or different or similar on this page or that. "Personality" to most people involves something extracorporeal, and it may or may not include a material element as well. If personality is determined by the ductless glands, it must surely be material; if it is merely influenced by them as by any other environmental condition, there is an element in the determination of human conduct which is superior to the endocrines—and this does not suit the author's hyperbolic enthusiasm for his thesis. He sees the difficulty but does not fairly face it, and does not appear to have decided whether the body originates mind or whether it is a window through which the mind shows itself. In one place (p. 22) he suggests that a sufficient acquaintance with biochemistry will identify man with God; a few pages farther on (p. 27) he warns the reader that nothing he has to say should be taken as impugning the proper existence of mind; later (p. 167) he comes down with the flat statement that "mind is emulsified with body as a matter of cold literal fact."

A point on which we should like to have heard Dr. Berman is the apparent failure of ductless glands to conform to the general rules of hypertrophy in consequence of use and exercise. Apart from the ill-established connexion between certain cases of hyperpiesis and enlargement of the adrenals, nothing of the kind appears to be known. Their failure from strain is more conspicuous, as in the neurasthenia of the adrenal personality; the lethargy of the exhausted pituitary; the final failure of the islands of Langerhans when sugar tolerance is pressed too hard (if indeed they are really responsible); and the inevitable fatality of Addison's disease. Yet personality, in some of its aspects at least, can be trained, moulded, and matured by human effort, and the variability in size of the ductless glands is not, if we may judge from Prof. H. H. Donaldson's rats at the Wistar Institute, inherently greater than that of such organs as the liver and kidney.

This notable book deserves sympathetic study. Its main proposition may be true or it may be false; more likely it is partly true. In any case the work is stuffed with suggestions for new ways of looking at old facts and with fresh lines of facts for observation.

FORENSIC MEDICINE AND TOXICOLOGY.

A Handbook of Medical Jurisprudence and Toxicology. Fourth edition, revised. By WILLIAM A. BREND, M.A., M.D., Barrister-at-Law; Lecturer in Forensic Medicine, Charing Cross Hospital. London: Charles Griffin and Company. 1922. Pp. 317. 10*s.* 6*d.*

SELDOM have we read a book in which unessential matter is so successfully eliminated and useful information so well and concisely treated. The writer expresses his hope that students will find it sufficient for examination purposes. Of this there can be little doubt, the question remaining whether the concentrated form in which the facts are here given affords reading as assimilable for the beginner as that in a larger book. By the student who has a grasp of the subject from lectures its matter will be easily absorbed in this form. For the practitioner the book is excellent; it contains just what he is likely to want to look up, and the masterly chapter on medical privileges and obligations will save him from error.

Aids to Forensic Medicine and Toxicology. Ninth edition. By W. G. AITCHISON ROBERTSON, M.D., D.Sc., Lecturer on Forensic Medicine, School of Medicine, Edinburgh. London: Baillière, Tindall and Cox. 1922. 3*s.* 6*d.*

THIS is also an excellent book, a wealth of information being crowded, though not overcrowded, into clean-cut chapters. Only that which is typical has been noted; there is no room for the borderline case and for the atypical symptoms met with in practice; but it is easier for the student if rules are grasped first and exceptions noticed later. He must, however, remember that in forensic medicine exceptions are frequent; we recall the case of a woman who was seen to throw herself in a canal but who presented none of the typical signs of drowning post mortem; also that of a baby, where overlying was acknowledged, in whom no single sign could be found to prove its occurrence. Thus a manual of this size, though useful, is by no means suitable as the only text-book to be read by the practitioner.

There are, moreover, statements with which we cannot agree and slips that might be rectified in future editions. The writer states that general paralysis of the insane may be identical with locomotor ataxia; the two diseases have the same cause and may coexist, but they cannot be described as identical. We doubt if sulphates act in the blood in forming harmless sulphocarbolates in carbolic poisoning. Probably it is harder nowadays to use the "simple process" for detecting corrosive sublimate by putting a drop on a sovereign than the writer leads us to believe. The allusion to coffinite (drolly spelt coffenite) seems to require some explanation—the reference is to the practice of the followers of one Coffin, a quack, who gave lobelia in such big doses that several deaths occurred. The strength of opium given, 1 gr. in 15 minims of the tincture, is not according to the present pharmacopœia, and the explanation of the action of chloral by the formation of chloroform in the blood is now obsolete. Hæmatoporphinuria, though well recognised after sulphonal, must be very rare, if it exists at all, after veronal and paraldehyde; in the same way ergot poisoning from any other grain but rye might safely be neglected. We doubt if brandy hypodermically will cause much stimulation in HCN poisoning; it will certainly leave a necrotic patch in the injected tissues if the patient recovers.

However, the student who has attended lectures with some assiduity and has noted those personal experiences of the lecturer which are so valuable a part of the teaching of forensic medicine will gain from this volume real help.

ORGANIC CHEMISTRY.

Recent Advances in Organic Chemistry. Fourth edition. By ALFRED W. STEWART, D.Sc. London: Longmans, Green and Co. 1921. Pp. 359. 21*s.*

THE fact that barely two years have elapsed between the publication of the third and present edition is evidence that Dr. Stewart's work supplies a want. In the introduction Dr. Norman Collie points out that many books on organic chemistry are published regardless of the fact that this subject is a growing science and these are in effect not much more than abridged chemical dictionaries.

The matter is dealt with under the headings: Organic Chemistry in the Twentieth Century—Mono and Dicyclic Terpenes—Olefinic Terpenes—Rubber—Alkaloids—Polypeptides—The Chlorophyll Problem—Anthocyanins—Some Theories of the Natural Synthesis of Vital Products—Trivalent Carbon—Other Elements which Exhibit Abnormal Valency—Modern Formulæ and their Failing—Some Unsolved Problems. Dr. Stewart has successfully avoided degeneration of the

text of his book into an uninteresting series of abstracts of authors' papers; he also very properly assumes that readers are not always acquainted with the earlier history of any given research, and does not neglect to provide a foundation upon which description of recent work can be based. To restrict the account of work done upon any important subject, such as proteins, carbohydrates, or terpenes, to papers published only within the last few years would be, in the author's words, "to distort the whole perspective of the subject and render the book unreadable," thus earlier work has been included wherever this seemed necessary. Some points are especially emphasised with the object of appealing to the younger investigators, and of stimulating them to further study of problems yet unsolved.

Fundamental Principles of Organic Chemistry. By CHARLES MOUREU. Translated from the sixth French edition by W. T. K. BRAMHOLTZ, with an Introduction by Sir WILLIAM J. POPE, K.B.E., F.R.S. London: G. Bell and Sons. 1921. Pp. 399. 12*s.* 6*d.*

THIS volume is a departure from the ordinary chemical treatise in that it describes from a very general point of view the principal theories of the present day and the more important functions of chemical bodies. A number of varied ideas are included with the object of giving a survey of the mechanism of the transformations of matter. Prof. Moureu, who is one of the most eminent French teachers and investigators of organic chemistry, expresses the opinion that anyone who has thoroughly assimilated these ideas will possess sufficient general instruction to enable him to consult with advantage the large treatises as well as the majority of original memoirs. The first chapter, which is introductory, deals with general theories and comprises nearly one-third of the volume. To the English organic chemist this chapter is arranged in a novel and refreshing style, and in itself constitutes an essay of unusual value and interest. In English text-books it is not customary to discuss the aromatic hydrocarbons immediately after the aliphatic ones, but, as is pointed out by Sir William Pope, such a mode of treatment is in many ways eminently logical. Succeeding chapters deal with functions containing oxygen, functions containing nitrogen, organo mineral compounds, heterocyclic compounds, and dyestuffs.

Soaps and Proteins: Their Colloid Chemistry in Theory and Practice. By Dr. M. H. FISCHER. With the collaboration of G. D. LAUGHLIN and Dr. M. O. HOOKER. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1921. Pp. 272. $4.00.

THE title chosen by the author for this volume is an odd one and appears to be based on his conviction that the problems associated with normal physiology in plants or animals or in the treatment of their diseases are more particularly problems in the colloid chemistry of the proteins. The chemical composition of the proteins as chains of widely differing amino-acids obviously presents difficulties when any direct attempt is made to analyse their colloid chemical behaviour. For this reason Dr. Fischer turned his attention to soaps which contain not only a more controllable number of chemical variables, but have a similar colloid chemical behaviour. Knowledge gained of the colloidal character of the soaps could, in Dr. Fischer's opinion, be used in the further study of the proteins. Some four-fifths of this volume are devoted to the colloid chemistry of soaps and soap manufacture, and the remainder to the analogies between the colloid chemistry of soaps, protein derivatives, and tissues. It is difficult to fathom for whom this volume has been written. Possibly portions of it will be read with interest by workers on colloidal chemistry and by soap technologists, but it does not appear to fill any particular need.

THE PRACTITIONER'S MANUAL OF GYNÆCOLOGY.

By A. C. MAGIAN, M.D., Gynæcologist to the Manchester French Hospital. London: William Heinemann. 1922. Pp. 436. 21*s.*

THIS résumé of gynæcology contains interesting features. It is drawn up on an anatomical plan, as the author thinks this less confusing to the student than a pathological classification. The diseases of the various parts of the pelvic organs are considered in detail and there are also chapters on such general subjects as disturbances of menstruation, abnormal hæmorrhages from the pelvic organs, venereal and tuberculous disease in the pelvis, associated diseases, operative technique, and the operations of gynæcology. There are also useful chapters on the care of the patient after major operations and the after-results of abdominal and vaginal operations. For the assistance of the reader a number of prescriptions are given in full; derivations of the various terms derived from Latin and Greek are included, and a short biographical note of important gynæcologists and others referred to in the text.

There are directions in which criticism is invited. For example, we remain sceptical as to whether it is anatomically possible for the retroverted uterus to be strangulated in Douglas's pouch. This statement occurs in various text-books, but observers have not seen the condition, nor is there any recorded case in which it can be proved to have occurred. The statement that a Hodge pessary acts as a lever is incorrect; it really acts as a straight splint in the vagina; moreover, that the use of such a pessary never cures a recent retroversion is too absolute a statement. The author is wrong in his statements that tents cannot be rendered sterile and are never used at the present day; they can readily be made aseptic and by some gynæcologists of repute are still used extensively with good results. Electrical treatment is recommended for several conditions for which its use is hardly as yet well established. No mention is made of the fact that at the present time the treatment of so-called fibrosis uteri by radium is so successful as to have almost entirely replaced hysterectomy, nor is it quite correct to say that X ray treatment gives better results than radium in fibroid tumours; this question is still sub judice. The present-day mortality of Wertheim's operation is hardly 50 per cent.; even in the hands of those who perform this operation on advanced cases the mortality does not exceed 20–25 per cent. In the chapter on ovarian cysts there is no mention of recent work on their development and the classification adopted is rather old-fashioned and out of date. We notice, also, that accidental hæmorrhage has been omitted from the list of hæmorrhages due to pregnancy.

The book contains a great deal of useful information and is written in an easy style. There is a good index and the illustrations are well chosen.

DER VERBAND.

Lehrbuch der chirurgischen und orthopädischen Verbandbehandlung. By F. HÄRTEL and F. LOEFFLER. Der Chirurgischen Universitätsklinik zu Halle-a-S. Berlin: Julius Springer. 1922. With 300 illustrations. Pp. 282. M.96.

THIS work is an attempt to treat so-called minor surgery or surgical handicraft as a definite entity from a teaching point of view. Under the generic title of "The Bandage" the authors have grouped a variety of technical procedures which represent the methods employed in the University Surgical Clinic at Halle. There are three distinct sections dealing with (1) the protective dressing or external bandage; (2) the mechanical dressing (fixation apparatus); and (3) the wound dressing.

In the first section a brief but interesting historical résumé of the evolution of bandaging is introduced, and the various classical bandages are illustrated in great detail—not by ancient line drawings as in the conventional works but by photographs with every turn of the bandage numbered. This makes each demonstration easy to follow. The second section deals

with various methods and types of splinting, with the technique of plaster-of-Paris applications, and with the methods of obtaining extension. Naturally the splints illustrated are those which the German surgeons, and the authors in particular, have been accustomed to use, but the general principles of the fixation of limbs are very clearly expounded. In connexion with the plaster-of-Paris technique it is certainly surprising to see depicted plasters which in their finish, fit, and general contour recall the artistic standard which formerly we were accustomed to expect from the French school alone.

The last section, dealing with the details of the wound dressing, the technique of the sterilisation of instruments and material, the treatment of wounds, and other miscellaneous procedures, is somewhat discursive, as if the writers had realised the difficulty involved in defining its limits. Here principles tend to be subordinated to the recital of minutiæ.

The book as a whole is an example of very efficient and painstaking work, and is to commended as presenting what is generally regarded as a dry subject in an attractive and modern guise.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—A useful résumé of knowledge upon the influence of industrial noises by Dr. D. J. Gilbert, Brussels, appears in the January issue. He concludes that more intensive investigation is needed to determine whether lesions due to noise are so localised that high and deep sounds act on different parts of the cochlea; whether air conduction in itself is sufficient to cause in time lesions of the internal ear; and what are the extreme limits of deficient hearing compatible with work in a noisy factory. And he proposes an international commission to inquire into the whole question.—In the same issue Dr. F. S. Kellog deals with the rehabilitation of employees based on an experience with 1210 cases. He gives data to demonstrate the need for medical care, having found that as the result of advice given after medical examination only 6 per cent. sought treatment. A progressive deterioration with length of employment was seen to be taking place, which is ascribed to infection from associates, persistent bad hygiene, and continual neglect. No initial medical examination can arrest this strong tendency to deteriorate; but medical supervision offers a means of securing rehabilitation and salvage of large groups of men and women. Neither employer or physician can in these days be content to watch the endless stream of more or less disabled sweep by.—In the February number Dr. S. Cobb reports upon a neuropsychiatric examination of 1141 students. The examinations carried out erred on the side of brevity; nevertheless, one or two interesting conclusions are drawn. Vaso-motor instability was found somewhat more frequently in men with neurotic histories: tachycardia, blood pressure variations, and dermographia were quite often associated with each other and with exaggerated knee-jerks; tachycardia, sinus arrhythmia, high blood pressure, and variable systolic pressure were more common in men with bad mechanical use of the body than the reverse; and men with good bodily mechanics passed better psychological examinations than did those with poor posture.—Dr. C. K. Drinker contributes a well-balanced review of the subject of lung fibrosis due to dust inhalation. Evidence is in favour of dust particles which reach the alveoli being removed therefrom by phagocytic action; and of the phagocytes concerned originating, not from proliferation of alveolar cells, but of endothelial cells lining the lymph channels. These cells envelop some dust particles, such as carbon, rapidly, and more slowly other particles, such as silica; the movement of dust-laden cells from the alveoli is a much slower process. Some cells pass into the bronchioles and are eliminated by ciliary action; others gain access to the lymph stream and so reach the lymph nodes and lymph glands. Silicia dust is recognised to be the most dangerous, but the claim is made that all forms of dust may cause some lung damage. This claim, however, is made without allowance for the ubiquity of silica and without knowledge of Gye's recent work upon the toxicity of silica. The author shows a tendency to trust too much to animal experiments and too little to human mortality statistics. Where the former do not confirm the latter the probability is that the experiments are at fault. Dr. Reginald Pratt, in a letter to our columns this week, records Dr. Leonard Hill's conclusion that the presence of small amounts of free silica in certain parts of the working premises has no influence on the incidence of the phthisis-rate in the boot and shoe trade in Leicester.

BRITISH JOURNAL OF EXPERIMENTAL PATHOLOGY. February, 1922.—I. De B. Daly and E. H. Starling: On the Effects of Changes in Intraventricular Pressure and Filling on the Ventricular Rhythm in Partial and Complete Heart-Block. In complete heart-block the idio-ventricular rhythm can be evoked by the stimulation of cardio-sympathetic nerves, and, in heart-lung preparations, a rise of arterial pressure, or increased inflow into the heart frequently causes increase in the idio-ventricular rhythm. This result may be due to increased tension or to the irritant effect of the stretching on the recent lesion in the neighbourhood of the auriculo-ventricular bundle. In incomplete heart-block a rise of arterial pressure or increased filling may cause the block to become complete; if the pressure or filling is reduced to its previous value the block becomes once more incomplete.—Walter E. Elliot, Arthur Crichton, and J. B. Orr: The Importance of the Inorganic Constituents of the Food in Nutritional Disorders. I., Rickets in Pigs. Pigs fed on bran and oatmeal with an abundance of the three vitamins developed rickets in two months. The control series fed on similar diet but with the addition of calcium salts did not develop rickets. Similar results were obtained when the diet consisted of oatmeal, rice, skimmed milk, and salt. If animals were fed on a diet containing a minimum of fat-soluble A but plenty of calcium salts, the rickets syndrome did not appear though the general condition of the animals was not so good as that of controls.—A. H. Drew: A Comparative Study of Normal and Malignant Tissues Grown in Artificial Culture. A salt mixture in which the calcium is present in the colloidal state can, with the addition of embryo extract, replace plasma for the cultivation of tissues in vitro, but embryo extract is essential. The degree of differentiation shown by cultures of normal and malignant tissues is partly conditioned by the accompanying growth of the stroma, which behaves in culture like embryonic tissue rather than like the adult tissue from which it is derived. This paper is illustrated by admirable figures.—G. A. Harrison: On Urea Tests of Renal Function. A description of the results of provocative urea-concentration tests in 400 cases. The urea-concentration factor =

$$\frac{\text{mg. urea per 100 c.cm. of urine (3rd hour)}}{\text{mg. urea per 100 c.cm. of blood (middle of 3rd hour)}}$$

repeated at intervals assists prognosis and is a guide to the rational treatment of œdema in nephritis by urea.—S. M. Copeman, R. A. O'Brien, A. J. Eagleton, and A. T. Glenny: Experiences with the Schick Test and Active Immunisation against Diphtheria. The results obtained in a residential school of 329 children. The authors suggest that carriers are only important epidemiologically when virulent bacilli are present in the throat in large numbers. (See also a short paper which appears in this issue on p. 738.)—B. R. G. Russell: The Carbohydrate Metabolism of Surviving Mouse Tissues and Tumours. Mouse tumours and tissues appear capable of dealing with the common sugars in a very similar manner, provided the sugars are applied directly. Variation in carbohydrate metabolism of tumours growing at different rates may be explained by the difference in the quantity of sugar within the cells.—H. E. Roaf: The Wassermann Reaction in Relapsing Fever. A transient positive W.R. may be found in the acute stage of relapsing fever.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS. AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

TYPHOID FEVER IN THE CIVIL POPULATION SINCE THE WAR.

BY CHARLES ACHARD,
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TYPHOID fever is a disease still widely spread in France; but it is diminishing in frequency, and it is for us to protect ourselves from it in the same way as we protect ourselves from variola, which at one time counted so many victims. Those who can draw on a memory of the last 40 years or so agree that typhoid fever at this epoch was a disease more severe, more prolonged, and more fertile in complications than that which we see to-day. This attenuation depends principally on therapeutic progress, especially on the care given to cleanliness and antisepsis, to the practice of refrigeration, to the regime of food and drink applied to patients; but the fact remains that more might be done to fight against the disease. An efficient system of prophylaxis might be instituted.

Two Orders of Prevention.

Two orders of means may be implied. Outside the organism, to suppress the germs of infection in everything which they can contaminate, and, before all, in potable water. In the organism itself, to create by means of immunisation the refractory state. To destroy the germs in external objects is to make a collective prophylaxis. To vaccinate the organism is to make an individual prophylaxis. The former has been practised and proved for long enough. The latter is more recent and is only beginning to make final proof of its efficacy.

The experimental work upon which antityphoid vaccination was originally based created no great sensation, because typhoid infection in laboratory animals differs considerably from human typhoid fever. The few attempts made on the human subject had not appeared to carry conviction, when Sir Almroth Wright, by vaccinating extensively in the English army during the South African war, demonstrated the very real efficacy of this procedure. This gave an indication for vaccinating soldiers on enlistment and the civil population in case of an epidemic.

In France, compulsory antityphoid vaccination for the army was recommended by the Académie de Médecine on Feb. 26th, 1911. It was imposed by Léon Labbé's law in 1914 (March 28th). Further, in several districts ravaged by typhoid epidemics, notably Avignon, Paimpol, and Puy-l'Évêque, vaccination of the civil population had an obvious effect in checking their progress. What could be more striking, in this connexion, than the epidemic at Jargeau (Loirat), which is described by Mr. H. Vincent? This epidemic, which began in September, 1913, was originated by a farmer's son, and spread by the milk supplied to her customers. Of 14 families attended by Dr. Grancher, 7 consented to being vaccinated, and of the 80 persons composing them, not a single one developed typhoid fever; the 7 other families refused vaccination, and of their 41 members, 29 developed the disease—an incidence of 70 per cent., with a mortality of 6·6 per cent.

The Position in 1914.

In 1914, at the beginning of the war, typhoid fever was prevalent not only in the army, but amongst the civil population remaining in areas near the front. In their case, as in the army, vaccination gave successful results. For example, the epidemic of Nœux-les-Mines (Nord) was arrested rapidly by vaccination carried out by Dr. Pilod. In the Argonne, where the disease was alarmingly prevalent and serious between November, 1914, and April, 1915, the medical officers of the 5th Army Corps vaccinated first the children and adolescents, who were protected; the disease, however, attacked older subjects; they were vaccinated, and then the only people attacked were those over 65 years of age; they also were vaccinated, and this put an end to the epidemic.[1]

At the time of the outbreak of war, vaccination was usually carried out only against typhoid fever, since practically all the cases which occurred were of this disease. As this vaccination gradually became universal in the army, the incidence of typhoid fever diminished in a remarkable and striking manner. But an unforeseen development occurred at the same time; paratyphoid infections, hitherto of rare occurrence, spread with unexampled rapidity. The scope of vaccination had therefore to be extended to include these infections, and a triple vaccine was used, prepared from typhoid bacilli and *Bacillus paratyphosus* A and B (T.A.B. vaccine). This vaccine was no less effective than its predecessor, and its use practically abolished all infections of the typhoid group in the French army. Mr. H. Vincent, medical inspector-general in the army, who was largely responsible for this vaccination becoming universal, has published entirely conclusive statistics in relation to it.

Is the Immunity Permanent?

Experience gained during the war has therefore clearly established the protective value of antityphoid vaccination. But it remained to be seen whether this immunity was permanent, and only the after-war period could decide this question. As a matter of fact, two and a half years after the end of the war, it is already evident that the immunity conferred by vaccination is of considerable duration. The question is an important one, not only from the army's point of view, but for the entire civil population. For if the protective effect of vaccination is only temporary, the vaccination of civilians could only be recommended as an occasional measure during times of epidemics; but if the effect is a permanent one, vaccination of the entire population becomes a valuable measure everywhere and at all times.

This question was gone into at the Académie de Médecine, following a communication by Prof. Chauffard, who submitted data suggesting that the immunity conferred by vaccination is lasting. Confirmatory reports were adduced by myself and Mr. Em. Sergent.[2] Soon after, at Lyon, MM. Rebattu and Milhaud brought forward further evidence in the same sense.[3] In disagreement with these observations, and even with the majority of those made in the army, MM. Rathery and P. Mathieu have published statistics collected during the war in a military hospital in the north of France.[4] It appears that of 168 cases of typhoid infections, 75 had been vaccinated, and 6 died—a mortality of 8·1 per cent., whereas of the 93 not previously vaccinated, only 2 died—a mortality of 2·1 per cent. In these results the large number of vaccinated subjects who developed the disease is as surprising as the low mortality among the unvaccinated. I do no more than quote them, since the figures were obtained during the war, and in army surroundings with their special conditions of infection, whereas I am concerned here with the after-war period and the civil population.

On the other hand, we may take into account statistics drawn up by the Administration de l'Assistance Publique in Paris, kindly communicated to me by Dr. Crouzon and Mr. André Mesureur. They refer to cases of typhoid infections observed at the Hôpital de la Salpêtrière among the nursing staff. Previous

to vaccination, in 1911, 10 cases of typhoid fever occurred, with 1 death. Vaccination was begun in 1912, and there were 5 cases, one of which was in a vaccinated nurse, but she had been given a pure typhoid vaccine, and her illness was paratyphoid. In 1913 there were 9 cases, one of which was in a vaccinated nurse, but she had received only two injections. In the following years, no case occurred until 1918, when there were 3 with 1 death in unvaccinated nurses, and in 1919, when a fully vaccinated patient died of typhoid fever. Thus, although the number of nurses has been increased from 672 to 898, there have been only 18 cases of typhoid fever since vaccination was instituted, eight years previously, and disregarding (rightly) cases of paratyphoid and of incomplete vaccination, there has been only one case in a vaccinated subject.

Detailed Statistical Study.

I now turn to a detailed study of further statistics. Mr. Chauffard, in his hospital statistics of the typhoid fevers, compares the pre-war with the after-war period, naturally ignoring the war period itself, during which male admissions to civilian hospitals were greatly reduced. In each of these two periods he compares the average age of the patients in each sex, and the number of cases occurring before and after the age of 20 years. Women, for the most part, were not vaccinated during the war, and in the case of the men, only those over 20 had, as a rule, been vaccinated. Mr. Chauffard notes that in 1912–13, of 11 men and 42 women, the average age for the men was 24 years and for the women 27, while in 1918–20, among 10 men and 23 women, the average age had fallen to 17½ years for the men and remained at 27 for the women. Further, the proportion of cases occurring before the age of 20 was, in 1912–13, 27·5 per cent. of men and 19 per cent. of women, but in 1918–20 it rose to 90 per cent. in the case of men but only to 24·5 per cent. of women. Thus there is little change in women, but in men the average age of incidence has fallen, and the disease attacks particularly males less than 20 years of age.

Mr. Em. Sergent's statistics are similarly arranged. During the period 1911–13, of 18 men and 9 women, the average age was 27 in the former and 26 in the latter. During the period 1918–20, of 4 men and 13 women, the average ages are 24 and 26 respectively. The proportion of cases occurring before the twentieth year was in 1911–13 35·5 per cent. of men and 22·5 per cent. of women; in 1918–20 it rose to 75 per cent. of men, and remained at 23 per cent. of women. These figures differ from those of Mr. Chauffard, in that they show a much reduced total male incidence relative to that in females. The average age of incidence in men is slightly lowered, and as in Mr. Chauffard's statistics, it is before the age of 20 that men are principally attacked.

It should be observed that the average age is not a very sure indication of the effect of vaccination, since one or two cases in adults who were not vaccinated during the war because they were never in the army would raise the average age of the male cases considerably in so small a series. On the other hand, the differentiation of cases occurring before the age of 20 is a good means of forming conclusions, for below the age of 20 adolescents of both sexes are exposed to infection under equivalent conditions, whereas over the age of 20 the majority of the males have been vaccinated.

The Author's Own Figures.

But the surest means of determining the lasting effects of vaccination is to inquire whether this vaccination has been done. The observations which I have collected give some information on this point. My small figures* concern cases treated at hospital since October, 1919, at which date, a year after hostilities were over, the relative proportions of the two sexes in the civilian population had practically returned to normal. Before the war, as in Mr. Sergent's figures, and contrary to those of Mr. Chauffard, the male cases were more numerous than the females. But after the war, of 30 patients treated at the hospital, 21 were women and only 9 men—i.e., only 30 per cent. of the cases were males. The average is 28 years for both males and females; it should be noted, however, that among the men was a patient aged 51, and that without him the average age would be only 23. This shows the defects of this method of evaluation. The differentiation of cases below and above the age of 20 gives 3 cases out of 9 under 20 years among the men, or 33 per cent., and 3 cases out of 21, or only 14 per cent., among the women. Thus the proportion of men below the age of 20 years was higher than that of the women attacked. But what is more interesting is the comparison of the vaccinated with the unvaccinated cases.

Severe Cases in the Unvaccinated.

Of the women none had been vaccinated. Of 21 cases 3 died—a mortality of 14 per cent. One patient, aged 38, died of infection from bed-sores, such as occur in the grave forms. Another, aged 29, died in the typhoid state, all her symptoms being characteristic of the adynamic form. The third, aged 28, who was nursing a baby, died on the thirteenth day with signs of cardiac failure. In four other patients non-fatal complications occurred. One, aged 44, had cholecystitis. Another, aged 34, developed a pelvic abscess during the febrile period, which burst into the vagina during convalescence, and in the pus from which gonococci were found. A girl, aged 18, had suppurative otitis. Lastly, a woman, aged 23, had phlebitis in the left leg, which came on during the defervescence of the fever. In one case, a woman of 21, a phase of continuous fever at 40° C. lasting three weeks was followed by a phase of remission to 38° C. for 10 days, when a relapse occurred, lasting 10 days, after which final defervescence took place. In another patient, aged 35, after a short acute period of only 15 days, and an afebrile interval of 10 days, had a relapse lasting 11 days. In 9 cases the illness ran the course of the severe form, lasting nearly a month, or even longer. Two of these cases were not typhoid, like the others, but paratyphoid A in a woman of 26, and paratyphoid B in a woman of 22 respectively. Lastly, 3 patients had mild forms; one girl of 19 was warded for 23 days; another, aged 13, was only ill for 18 days, and a woman of 25, with paratyphoid B, was only in hospital for 19 days.

Among the group of 9 men we were able to ascertain, in every case except one, whether the patient had previously been vaccinated or not. The patient in whose case we were unsuccessful was aged 51, and it is highly probable that he had not been vaccinated. He had typhoid fever lasting six weeks, and during the decline of the fever developed abdominal myositis, an exceedingly rare complication, which resolved without going on to suppuration. In 5 other patients vaccination had not been done. One of these men, aged 28, had paratyphoid B, which was proved by a blood culture and by agglutination tests; after a febrile period of 19 days and an apyrexial interval of five days, he had a relapse complicated by a perforation which terminated fatally. The second, aged 20, had typhoid, with prolonged fever and intestinal hæmorrhage. A youth, aged 18¼, with typhoid which was at first appendicular, had a prolonged form of the disease, with abdominal pain and contractures, and recovered after an illness of two months. A patient, aged 24, had a severe form lasting a month. The last, aged 18, had a benign form, which resolved in four weeks.

Cases in Vaccinated Subjects.

The 3 remaining patients had been vaccinated during the war. One, aged 26, had been given at the beginning of the war in 1914 four injections of the vaccine employed at that time, which contained only typhoid bacilli. Now his serum agglutinated only *B. paratyphosus* B. His illness was a very slight one, the temperature hardly ever rising above 38·5° C. After about a fortnight of vague indisposition he went to bed, and became afebrile 15 days later. The second, aged 24, had been given in 1914 three injections of T.A.B. He had a mild illness, but with clearly defined symptoms, headache, insomnia, epistaxis, splenic enlargement, and gurgling sounds in the iliac fossa. No rose-spots, however, appeared on the abdomen. The temperature rose to a maximum of 38·5° to 39° C. for six days, and the total duration of the illness was only 17 days. Typhoid infection was demonstrated by blood culture and by the agglutination test. The third patient, aged 30 years, had been given three injections of vaccine in 1916, and in 1917 and 1918 two further injections. He had only a mild attack, with headache, slight epistaxis, constipation, a few rose-spots, and a slight rise in pulse-rate. His temperature varied from 38·4° to 39·2° C. for five days, and then fell. The total duration of the illness

* I have added a few more cases to those referred to in my communication to the Académie de Médecine.

was only 15 days. His serum agglutinated *B. paratyphosus* B, and to a less extent, *B. typhosus*.

Although few in number, these figures suggest some instructive conclusions. They show in the first place the preponderance of female cases, 70 per cent.; next, the frequency of cases below the twentieth year, 33 per cent., notably greater than in the females, in whom it is 14 per cent. Lastly, what is particularly striking, the comparison between the vaccinated and unvaccinated. In 26 unvaccinated subjects of both sexes there were 4 deaths, or a mortality of 15 per cent., and in 3 vaccinated subjects no deaths. Of the unvaccinated 6 had complications, and 3 had recrudescences or relapses; in only 3 was the course of the illness a brief one. It cannot, therefore, be said that during the period concerned typhoid infections were benign.

But the small number of vaccinated patients admitted to the hospital shows that the susceptibility to typhoid infections of vaccinated subjects is slight; it represents, in fact, only a tenth of the possible cases, which justifies us in concluding that vaccination over two years previously had protected the majority from the disease. Further, of the vaccinated patients, one who had only a vaccine protecting him against typhoid developed paratyphoid B, which shows the necessity of a mixed vaccine. The two others, who had been given T.A.B., had exceedingly mild illnesses. Notable diminution in the case-incidence and attenuation of the disease are the two essential facts evident from these observations.

Greater numerically, the statistics of the Lyon hospitals, given by MM. Rebattu and Milhaut, lead to similar conclusions. Before the war, in 1912-13, there were 453 cases, of whom 38 per cent. were males; after the war, in 1920, 212, of whom only 28 per cent. were males. The average age-incidence in males has dropped from 34 years before the war to 29 years after. Of the 60 men treated in the hospital during 1920, 9 had been vaccinated, but in most cases only incompletely; however, they had, as a rule, only mild attacks, or paratyphoid. Two died, one of whom had had only one injection of vaccine.

Lessons of these Observations.

To summarise these observations, their chief significance is that vaccinated subjects have a much reduced susceptibility to the disease. Further—and this second fact is not less important—it appears that when vaccine immunity is not complete, it may nevertheless provide a degree of resisting power which greatly diminishes the severity of the disease. These conditions are identical with those which long experience has shown to apply to vaccination against small-pox—complete immunity of long duration, and attenuation of the disease when that immunity has partially been lost. One is therefore naturally led to consider the employment of vaccination against typhoid on the same lines as that against small-pox—that is to say, systematic and widespread vaccination of the civilian population, and periodic revaccination, particularly in times of epidemics.

But there are a few practical details in which the two cases differ. Would it be satisfactory to vaccinate infants against typhoid fever, as they are now against small-pox? Obviously, if the immunity thus conferred were as lasting as that against small-pox this early vaccination would be desirable. But the case is a different one, and frequently repeated immunisation is out of the question. Moreover, typhoid fever is rare in infants, and relatively benign in older children. It is usually about the fifteenth year that it becomes a serious disease. Hence Mr. Chauffard suggests recommending vaccination at the age of 15, to be repeated twice before the age of 21, a proceeding which, by reinforcing the immunity, might prolong it throughout the period between the twentieth and the thirty-fifth years, during which the majority of cases occur.

On the other hand, vaccination does not appear equally necessary in all localities. It is particularly in towns, where outsiders make short stays, and in certain bathing resorts, that typhoid is prevalent; hence it is in these places that vaccination should be widely applied. In country districts and small villages, where typhoid fever is rare, the need for immunisation, according to Mr. Chauffard, is not so great. At the same time, as Mr. Vincent has observed, when typhoid fever occurs in the country in epidemic form it assumes more serious proportions, because transmission from person to person occurs more readily; the underground water-supply is freely polluted by the dejecta of children, flies abound, and effective disinfection is a difficult matter. Hence vaccination is the surest means of arresting an epidemic in the country. But it is equally true that systematic vaccination of the civilian population is emphatically to be recommended in urban districts where typhoid infections are endemic.

Individual and Collective Immunisation.

Considered from the point of view of individual rather than collective immunisation, antityphoid vaccination is particularly advisable for persons who move about a great deal, as, for example, commercial travellers, who are obliged to traverse areas where the disease is endemic, and for those whose occupation brings them in contact with patients, such as medical students, hospital attendants, and nurses. In short—and this is the opinion pronounced by the Académie de Médecine on Mr. Chauffard's propositions[5]—general anti-typhoid vaccination is advisable for adolescents, principally in urban centres, and at all ages and in any place where an epidemic occurs. It should be observed that the Académie has not suggested making this vaccination compulsory by law; but it is to be hoped that the public in the towns, aware, thanks largely to propagandist efforts which the profession will make, of the success of vaccination during the war, will accept and insist on its application.

Finally, since we are still to some extent in the dark as to the duration of the immunity conferred by the vaccines at present in use, and as their preparation must be brought to the highest possible point of perfection, it will be of great value, in the study of this important practical point, to investigate the cases of typhoid infections occurring in vaccinated subjects. Therefore the Académie has instructed practitioners in future to append on the compulsory notification paper such information as they can furnish as to antecedent vaccination.

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VACCINE THERAPY IN THE LATE COMPLICATIONS OF TYPHOID AND PARATYPHOID INFECTIONS (OSTEOPERIOSTITIS).

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AT the present moment the value of preventive vaccination against typhoid and paratyphoid infections is no longer in dispute, having reached the stage at which prophylactic vaccination has been made obligatory in most armies, and at which the Academy of Medicine has recently passed resolutions to impose it on the civil population, to whom, until now, it was merely recommended.

It is quite otherwise with curative vaccination. The attempts which have been made in the course of the acute period of typhoid infection have often given rise to doubtful and contradictory results, and our own experience in comparative observation of patients treated on the one hand by the ordinary method and on the other by injections of sensitised vaccine (Besredka) or autolysat (Vincent) have not been able to convince us of its efficacy.[1]

Uncertain in acute typhoid infection, the results of vaccine therapy seem much more certain in chronic manifestations, when the body is protected by a former attack or by preventive vaccination against acute accidents or blood infection. The first work relating to this order of research scarcely goes back, it is true, more than a few years, and delayed vaccine therapy has only as yet been employed with success in the case of bony complications of typhoid fever—namely, osteitis and spondylitis. Nevertheless, it should not escape the attention that we have here a method capable of much more general application and one which deserves to be utilised, as we have already said, not only against the specific sequels of typhoid infection, but also against indirect, or, as we may put it, atypical sequels, such as cholecystitis or even biliary lithiasis. In the latter condition we have already made an attempt in one case with an appearance of success.

Recent Attempts at Vaccine Therapy.

These new theories are based on data too extensive for description here, to which we have devoted particular attention; we shall describe later how one of us was able to explain these facts by reproducing experimentally the conditions required for vaccination against acute and chronic infections, a complex problem whose discussion involves the nature of immunity itself.[2]

If credit is to be given for the earliest attempt to employ vaccines in the treatment of typhoid osteitis, it belongs to the American physician Frick,[3] who was the first to propose vaccine therapy in prolonged forms of typhoid fever, such as has been employed successfully in the case of carriers. Frick's suggestion appears, however, to have been neglected almost entirely. In January, 1917, Dr. Emile Weil showed at the Académie de Médecine five cases of typhoid osteitis cured by a typhoid vaccine; the treatment had consisted of 16 injections administered on alternate days. In August, 1917, he resumed this interesting subject, and published in the Presse Médicale 12 cases which he had observed with Mr. Chevrier, treated by vaccines, either alone or in association with surgical procedures. Weil and Chevrier began with small doses which were steadily increased; their patients were given two injections a week, the first four of ¼ c.cm., ½ c.cm., ¾ c.cm., and 1 c.cm. respectively, the next four of 1 c.cm., and the remaining eight of 1¼ c.cm. When there was open suppuration, with sequestra, operation was also necessary to produce a cure. Weil states that it is necessary to identify the responsible organism in order to employ the corresponding stock vaccine; T.A.B. should not be used, unless the usual laboratory facilities are absent. A blood culture is useless, since the blood condition concerned is purely chemical; the diagnosis is made by agglutination tests; in doubtful cases where both typhoid and para. B are agglutinated, the method of agglutinin saturation may be employed.

The Effect on Spondylitis.

The cases reported by Weil and Chevrier were principally of osteitis of the ribs. Later MM. Henri Dufour, Debray, and R. Guyard communicated to the Soc. Méd. des Hôpitaux results they had obtained by vaccination in four cases of spondylitis, using the mixed vaccine T.A.B. The first of these cases dated from the year 1917, and had already been published by one of our assistants at the Hôpital du Val-de-Grâce. The injections were given as follows: a first dose of ¼ c.cm. in all cases, followed by 1 c.cm. and 1¼ c.cm. consecutively. There was no local reaction, and, similarly, general reactions were either slight, absent, or represented by brief rises of temperature with no serious features. The temperature fell immediately after the first or second injection, and the patients made rapid progress towards cure. This was complete in about a fortnight in the first three cases, after two injections; the last patient, on the other hand, had five injections of T.A.B., and complete resolution only occurred after a month.

We wish to emphasise this point, that the mixed vaccine T.A.B. may usefully be employed when the responsible organism cannot be identified, when unequivocal laboratory results cannot be obtained, and similarly when only a mixed stock vaccine is available.[4]

Following on Dufour and Weil's reports, MM. Sicard and Robineau published a number of cases of typhoid osteitis, some treated by vaccines; these authors used various preparations—T.A.B., lipovaccine, Ranque and Senes's iodised vaccine—and produced favourable results on the evolution of these bone sequelæ. In their experience vaccine treatment was particularly effective in the non-necrotic forms of osteoperiostitis without sequestrum formation. Few though these attempts are, they have opened up a line which may lead to results of considerable interest from the therapeutic point of view. Such is the present position of vaccine treatment in the late bone sequelæ of typhoid fever.

Theory of Vaccine Treatment.

Not less interesting, from the academic point of view, is the explanation of the efficacy of vaccine treatment at this stage of the disease. There is, undoubtedly, room for astonishment at the beneficial effect of such a vaccine in a patient who has undergone an acute infection and (since the main disease is cured) overcome it, and yet cannot dispose of residual organisms, which are still sufficiently virulent to produce obstinate complications. It would seem that the immunity acquired by virtue of the acute disease is not always total, and that vaccination, under these conditions, acts by exciting an added effort on the part of the body, as the result of which its immunity finally becomes complete. Obviously this is only a hypothesis, but the results of experimental work go far to confirm it.

One of us (H.D.) has studied in rabbits the development of chronic forms of infective disease in animals rendered immune by acute infection with the same organism, and the effects of vaccine treatment in these chronic conditions. The organism used was a culture of *B. Paratyphosus* B, kindly provided by Mr. Besredka of the Pasteur Institute, a very reliable strain, which kills a rabbit in 24 to 36 hours after intravenous injection of 0·1 c.cm. of an emulsion in 10 c.cm. artificial serum of a 24-hour agar culture.

A vaccine prepared from this organism was administered by the "intestinal sac" method; it is introduced into the peritoneal cavity of the rabbit to be vaccinated within a segment of gut previously removed from a healthy rabbit immediately after death. Two rabbits were vaccinated in this way with cultures of para. B killed by heat. Six weeks later they were given an amply fatal dose of a living culture. They overcame this infection entirely, but developed paralysis of the hind legs; a second fatal dose was given, and this was followed by complete recovery. The virulent culture in this case had effected super-vaccination.

It can only be supposed that a body even violently immunised against fatal doses may retain some of the organisms, or acquire a fresh infection by the same organisms, which are capable of producing chronic disease; this can only be cured by a fresh vaccination, or super-vaccination, and it is possible in the latter to employ living, and consequently more active, organisms. Thus we may justify and explain the efficacy of late curative vaccination; it becomes clear why this vaccination should be necessary in certain cases, where, the acute stage of the disease being past, fresh stimulation is required to elicit an effort from the body, which is no longer threatened by any immediate danger.

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The Prophylaxis of Typhoid.

AN enormous mass of statistics bearing upon typhoidal disease in the British forces accumulated in the records of our medical services during the war, and is unfortunately not yet available for detailed study. Were this information forthcoming, there is no doubt that it would conclusively and mathematically demonstrate the exact value of anti-typhoid inoculation, besides throwing light upon a number of collateral problems. In the meantime, it is by the observations of individuals that our knowledge progresses. In the French supplement to the present issue of THE LANCET Prof. CH. ACHARD contributes to some aspects of the problems revolving around typhoid fever. In Great Britain typhoidal disease is at its last gasp. Improved hygiene, albeit acting rather in the dark, had dealt it a severe blow before bacteriology showed the essential method of transmission, and pointed with increasing exactitude the way to collective prophylaxis in ACHARD'S sense. But in France typhoid has proved more stubborn than in this country and in certain localities, especially the devastated areas in which hygienic measures must be far from perfect, the disease has recently assumed epidemic proportions. Under these circumstances the question has arisen for serious consideration whether individual prophylaxis, in the shape of inoculation, should not be applied broadcast. Influenced no doubt by urgency and economic considerations, the Académie de Médecine has recommended the routine inoculation of adolescents between the ages of 15 and 21 in endemic areas.

A second problem, intimately bound up with this decision, for it largely arises therefrom, is that of the permanence of the immunity so produced. If we take the agglutinin content of the blood as evidence of this we find that the protection rapidly declines, but it is becoming more and more widely accepted that the presence of these substances in the blood is no more than an epiphenomenon, and is no index of the resistance of the individual. Prof. ACHARD maintains that the immunity is really durable, and the figures which he quotes, although too few to be statistically reliable, point in this direction; the incidence of the disease, in the post-war period, has tended in France to fall more on the uninoculated than on the inoculated section of the community. This view may not find support from the experience of medical officers who were in charge of laboratories and infectious hospitals in the late war, whose general experience was that the incidence of typhoidal disease varied directly with the length of time which had elapsed since the patient's last inoculation. In these cases, moreover, the period which elapsed between the previous inoculation and the onset of the disease was at the most two or three years; two facts which do not point to any very lasting immunity. It is, however, possible that a relatively small degree of resistance, lingering for a considerable time after inoculation, may suffice to protect against the somewhat slight risks of infection met with in civil life, whilst being quite insufficient to afford protection against the intenser and more massive infection encountered in the field. Undoubtedly, as an emergency measure, the inoculation of the civil population against typhoid is called for, and may be expected to yield valuable results. But difficulties have arisen, as in the epidemic of typhoid which broke out in the Pas de Calais following the drought last summer, when DR. LOUIS VAILLANT essayed local prophylactic vaccination. The inhabitants could not readily be persuaded to take the piqûre, and many, having experienced the reaction produced by the first dose, declined to submit to a second. Thereupon Dr. VAILLANT proceeded to substitute for the ordinary hypodermic injection the administration of a vaccine combined with bile and given by the mouth. The bile, as BESREDKA has shown, facilitates the absorption of bacterial products from the intestine. Careful inquiry indicated that very slight inconvenience resulted from this method of taking the bacteria: of 396 vaccinated at Bailleul, 15 had slight colic, 5 slight diarrhœa on the first day, 24 headache, and 1 nausea. The typhoid vaccine and bile are taken in pill form on rising in the morning, for three successive days, the material used being triple vaccine, the familiar T.A.B., killed by heat. The results were communicated to the Académie de Médecine, and appear in a recent issue [1] of the *Annales de l'Institut Pasteur*. Out of a total population of 2000, there were 1236 who received vaccine by mouth and 173 vaccinated by hypodermic injection, leaving some 600 who escaped. The results in these three groups are expressed as follows:—

I. *1236 vaccinated per os.*—Cases, 5; morbidity rate, 0·17 per cent.

II. *173 vaccinated hypodermically.*—Cases, 4; morbidity rate, 2·3 per cent.

III. *600 unvaccinated.*—Cases, 21; morbidity rate, 7·7 per cent.

Twenty-nine cases in Group III., before the vaccinations began, are rightly excluded from the comparison. Of the five cases in Group I., three occurred during vaccination or on the following day, and the remaining two within 10 days. The cases in Group II. occurred between the fifth and twelfth days after vaccination.

Prof. ACHARD draws a parallel between immunisation against typhoid and immunisation against small-pox. We do not feel that the comparison is entirely just. Typhoid is a disease conveyed by the excreta, in which the contagium may continue to be discharged for long periods and may live outside the body for no inconsiderable time under favourable conditions. To attack this disease by individual inoculation may be to ward it off for a period and to reduce its incidence in the treated section of the population, but to successfully carry out collective prophylaxis, which is the ideal method, the problem is not one of vaccination; it is an affair of sewage, water, and milk.

The Study of Criminal Psychology.

A WELCOME revival of interest in the problems of mental disorder and defect amongst all sections of the community is leading to a recognition of the importance of psychopathological factors in the causation of many social evils, with the result that a fresh orientation has been given to the study of crime and punishment Isolated observers had long noted the association of anti-social conduct with mental abnormality, but their insistence was not strong enough appreciably to modify the practice of penal administration. Metaphysician and jurist were authorities by no means disposed to welcome the intrusion of medical science

[1] February, 1922, p. 148.

in matters which they deemed to be their exclusive domain. Crime was to them a misdeed to be punished, and not a psychological phenomenon to be investigated; the criminal was a deliberate wrongdoer, endowed like other men with freedom of will but perversely electing to follow evil courses. The business of the law was to establish the facts of the criminal offence, to prove the guilt of the accused person, and thereupon to assign penalties suited to the moral heinousness of the act or to the degree of injury inflicted on the community. The objective elements alone of crime were considered, no regard being paid to the personality of the criminal or to the existence of biological conditions determining his conduct.

In its practical application, no doubt, the extreme juristic doctrine was modified by the growth of humaner tendencies in social life, but it nevertheless retained sufficient vitality to offer a formidable obstacle to the scientific study of crime. The influence which contributed most largely to removing that obstacle, and which thus prepared the ground for the active movement of to-day, was the work of the Italian school of criminal anthropology: work vitiated, it is true, by even more than the ordinary defects of pioneer effort, but meriting more respect than is generally accorded to it. For, despite the errors of observation and the fantastic extravagances of theory which have discredited LOMBROSO'S teaching, he was among the first to insist on the vital truth that the method of criminology must be the method of individual clinical investigation. This truth was for a time obscured in the reaction from the wilder doctrines of the Italian school, and other methods, notably the analysis of mass statistics, in the very able hands of the late Dr. CHARLES GORING, enjoyed a temporary vogue. But criminological inquiry has returned to the right path; it no longer attempts to generalise by inference from masses of heterogeneous and untested data, but is content to proceed by the slower and surer method of the exact observation of individual instances. The spirit and methods of medical science may furnish material for tentative conclusions of progressively larger scope. Progress in this direction has already been made abroad. In the United States of America societies have been founded and journals are being published devoted mainly or entirely to the study of delinquency, especially in its psychological aspects; lectures on criminology form part of the curriculum in the legal as well as in the medical faculties; and there is a growing tendency to make the psychological laboratory an essential adjunct of the criminal court. The work done under the auspices of the American Institute of Criminal Law and Criminology is already bearing fruit.

In this country criminological study has been of slower growth. The first recognition of its claims to scientific status was due to the enlightened initiative of Sir FREDERICK MOTT, who included in the programme of post-graduate instruction at the Maudsley Hospital a series of lectures on criminal psychology. His example is now being followed in other teaching centres, and we announced last week the post-graduate course, organised by the Faculty of Medicine of Birmingham University, dealing specifically with the subject of Crime and Punishment. The course, which follows a suggestion in our own columns[1] made by Sir WILMOT HERRINGHAM, is to be held in the coming summer session, from May 15th–26th, and, in addition to lectures by specialists in criminology and psychiatry, will include clinical demonstrations at Winson Green Prison and Barnsley Hall Asylum. This departure is fittingly associated with Birmingham, where the public authorities have given proof of an enlightened spirit in their attitude to the problem of delinquency. The scheme which is now being inaugurated under the auspices of the University is, in fact, the outcome and development of the movement initiated a few years ago by the Birmingham justices to secure the systematic examination of the mental state of certain categories of petty offenders brought before the local courts of summary jurisdiction. Cases in which, from nature of the offence or from the antecedents of the accused person, especially in regard to recidivism, the existence of mental abnormality may be suspected, are remanded for the expert advice of the medical officers of the prison and of the Mental Deficiency Committee, whose reports are then available for the justices in dealing with each individual offender. On the working of this system Dr. HAMBLIN SMITH and Dr. W. A. POTTS have recently reported to the justices in a document obtainable from the clerk to the justices at the Victoria Courts, Birmingham. The University instruction in criminal psychology now to be instituted is the natural complement and extension of practical work so carried out by these medical experts in connexion with the Birmingham Courts. In view of the far-reaching reactions which may follow from this experiment we earnestly hope that it will find the support which it merits from the medical profession and, when the lectures are opened to a wider public, from the legal profession also. The project has been launched at an opportune moment. Public opinion is keenly alive to the need of finding more effective methods for dealing with the problem of crime, and is ready to welcome the aid of psychology in searching for a better solution.

[1] THE LANCET, 1921, i., 47.

Health and Municipal Elections.

THE landslide which has occurred during the last fortnight at the municipal and Poor-law elections in London boroughs and the surrounding ring of great urban districts may have some influence on public health. It is a fact that in all the areas in which the municipality has undertaken more than its usual share in arranging for the medical care of its citizens, those responsible for this tendency have now lost their majority, and for the most part their seats, on the councils. Especially is this the case in Willesden where the candidates nominated by the local ratepayers' associations have swept five out of eight wards, in two cases medical men heading the poll. Only in Poplar and Shoreditch, where the assistance given out of the poor-rate to the unemployed was on a lavish scale, have the Labour guardians retained the suffrage; but their example, discreetly viewed from adjacent areas, was sufficient to cause the downfall of their colleagues on boards of guardians elsewhere. Economy in money, rather than economy in effort or in human life, was the chief plank in the election platform, and it remains to be seen how this conception of economy will make itself felt in local health administration.

Take first the health services which have recently come under public notice in the Willesden district. The opponents of the Urban District Council's comprehensive health scheme are now in a position, should they desire to do so, to empty the municipal hospital of its maternity and gynæcological patients, to put a stop to the operations which are being done there on cases referred from the municipal clinics, and to purge the clinics themselves of all those who are either not actually indigent or not already entitled by statute to use them. The municipal hospital would then revert to its original purpose of isolating cases of scarlet fever and

diphtheria, a rôle which admittedly plays a part in the health of a community, although not so preponderating a part as was supposed before the discovery of diphtheria carriers and of toxin-antitoxin immunisation, and before mild scarlet fever became so prevalent. The hospital is staffed by medical officers and nurses who have for long enough been so overworked that this change would be a form of holiday; they are the civil servants who have to carry on, whatever may be the political complexion of the birds of passage in the council chamber. The position is now, as we have said, in the hands of the victorious and economically minded ratepayer, but we are loth to believe that he will use his power in any sense in the direction of reprisal, for in Willesden at least the landslide has been engineered with the help of the local medical profession. Regrettable incidents may have occurred on the hustings, such as the public exhibition of women and children alleged to have suffered under the municipal health scheme. Fortunately, the formation of a local medical advisory council has been put as the first desideratum in a complete understanding between ratepayer, medical officer and practitioner, and such an advisory council—we hope that its formation is now only a question of days—would find itself fully occupied at once with constructional work.

The claim of the practitioner of medicine to take his due share in the public work of the school, maternity, and venereal services cannot possibly be gainsaid. Even should, for the moment, the work be less well or less expeditiously done thus than by full-time medical officers imported from outside the municipality, no unprejudiced person, medical or non-medical, can doubt that it is for the good of the community to have its health services in close touch with general practice. Preventive medicine in our own time is making headway slowly but surely by learning from the sick to the healthy, not by the reverse process. Wherever part-time service in municipal clinics by the practitioners of the neighbourhood has had a fair trial it has been a success. This will come in Willesden as an agreed policy, not as a reversal of present policy. Accommodation for maternity cases may no longer be required in like measure, for in other parts of the country municipal maternity hospitals are not finding their beds in so much demand as in the years of demobilisation. Some trifling expense to the communal purse may be saved by these changes, but money-saving will not determine the public health issue in the hands of an intelligent community having at its disposal an advisory committee representing all the medical talent in the district. It would be bold to assert that coöperation and reasonableness is not also the policy of the Labour movement as a whole. The hospital scheme, to which we alluded last week and shall return later, includes the closest touch between practitioner and hospital staffs of hospitals, and part-time service by practitioners in Poor-law infirmaries. The Labour movement even foresees a number of opportunities afforded to the charitable public of making useful gifts to their fellow men which the local health authority is not justified in providing out of the rates.

KING'S COLLEGE HOSPITAL.—A number of provincial surgeons, members of the Surgical Union, visited the Urological Departments at King's College Hospital last week. The visitors were received by Sir John W. Thomson Walker. The morning was devoted to lectures, followed by a lantern demonstration in the medical school. Cases of cystoscopy and fulguration treatment of bladder growths were demonstrated in the out-patient department, and cases of pyelography in the radiographic department. In the afternoon operations were performed on urological cases.

Annotations.

"Ne quid nimis."

SUGGESTION IN MEDICINE.

Mr. Coué has come and gone for the second time, and it was perhaps hardly his own fault that the public greeted as a new revelation his method of treatment by suggestion. In a letter to the *Times* last week Dr. William Brown offered a necessary check to public enthusiasm, pointing out that there is nothing new offered by Mr. Coué, whose views have long been known as quite inadequate for the understanding and lasting cure of the majority of cases of functional nerve disease. Pious pilgrimages, Christian Science, the touch of the magic healer, and methods of frank charlatanry, all associated as a rule with manifestations of popular wonder, have long been familiar to us as influencing such disorders, and the purposeful use of suggestion has had a place in orthodox medicine. But medicine has gone beyond the acceptance of the sufficiency of suggestion in the cause and treatment of minor mental disorders, and many whilom suggestionists have abandoned its use in favour of methods which demand more psychological knowledge on the part of the physician, associated with real and often painful effort on the part of the patient. Modern workers find in the activity of unconscious processes, which are capable of definite exploration, both the cause of these disorders and the opportunity of a reasoned method of treatment. Dr. Brown alludes to such processes and suggests that an attempt at precise definition on the part of Mr. Coué might have led him to make acquaintance with them. But the simplicity of Mr. Coué's theory and practice is attractive. It is a serious task for the neurotic to discover and admit the unconscious motives of his neurosis, and to face his difficulties instead of shirking them; the promise of a cure by such easy ways as counting 20 knots on a string, whilst repeating a now well-known formula, makes little demand upon moral courage. Any process that induces a belief in cure, under whatever disguise the process appears, will help some nervous sufferers and may influence the progress of bodily disease. If a favourable emotional state can be induced by the operator the immediate removal of symptoms may be striking, but judged in the light of modern theories as to origins, the method belongs to the same epoch as when surgery was content to remove the obvious lump in a case of cancer, and may remind us of the gardener who is content to pull the tops off the dandelions.

In the ready acceptance of suggestion as an explanation of cause and cure we see the working of the desire for comforting words in place of knowledge. Suggestion is popularly regarded as a source of energy—a tank of fairy petrol, to be tapped by incantation; among medical psychologists it is rapidly losing value as anything more than a vague indication of a mental process determined by other factors than simple logical thought. Our French colleagues, Babinski and Bernheim, for example, still accept it as a cause of symptoms, and are satisfied; psycho-analysts regard it as only one form of the displacement of effect—that is to say, the operation of a previously existing emotion (such as respect for or fear of a parent) which finds a new object. English psychologists, headed by Prof. William McDougall, who has now left us for Canada, attempted to define and analyse suggestion as conditioned by many and variable factors—prestige, self-confidence, or confident assertion on the part of the suggestor and, in the subject, the desire to believe, expectation, the herd instinct, the instinct of submission, and the like. The process is so common that it influences a great part of our beliefs and opinions, and by the generality of its occurrence it becomes valueless for particular pathological explanation. What explains everything explains nothing, and, when an attempt is made to find in special factors

the cause of abnormal suggestibility, those factors become of chief importance and the mere process of suggestion falls into the background. Auto-suggestion is a further example of the comforting word; the unconscious motive is obvious in some hysterias and is to be found by mental exploration in other psycho-neuroses; the influence of emotion upon vegetative bodily functions is something totally different. In either case, to murmur "auto-suggestion" may be a convenient means of shirking investigation. The medical profession has suffered in the past through lack of psychological knowledge, a lack which sometimes drove neurotic sufferers into the hands of other healers of whom some, like Mr. Coué, possessed the advantages of transparent honesty and confidence in their own methods. Psychological progress originating within our ranks is enabling us to study and treat these disorders on the same scientific principles as have been established in regard to physical disease.

SMALL-POX AND VACCINATION.

IN a recent conference of the Society of Medical Officers of Health Dr. W. McConnel Wanklyn, reviewing the present position of small-pox and vaccination in this country and discussing the factors which might have contributed to the fall of the disease, laid great emphasis on the debt owed by Great Britain to the adequate systems of vaccination and revaccination prevailing on the Continent, a further factor being the effective control by port sanitary authorities, who, mainly owing to the improved methods of diagnosis laid down by Ricketts in 1900, were enabled to detect early cases of the disease. Yet another factor of scarcely less value is the carefully collated evidence, statistical or otherwise, from individual medical officers of health, at home and abroad, dealing with the varied clinical aspects of outbreaks of small-pox, together with indications as to effective administrative control. Two examples of this type of evidence are found in a short report (summarised on p. 722 of our last issue) issued by Dr. Philip Boobbyer, medical officer of health for Nottingham, and in the pioneer work done on the Gold Coast by Dr. P. S. Selwyn-Clarke, of the West African Medical Service. Dr. Boobbyer, surveying the outbreak of small-pox in Nottingham in 1921 and 1922, noted a large proportion of cases of alastrim type; he disagrees with Dr. L. M. Moody, the Government pathologist of Jamaica, in his opinion of alastrim as a disease which naturally runs a mild or benign course, as distinguished from a mild form of a severe disease; cases in Nottingham, especially in young unvaccinated children, were often diagnosed as varicella, but proved to be undoubted cases of small-pox, to which severe attacks of the disease in contacts were clearly traced. A table appended to the report, showing the incidence in different age-periods among the vaccinated and unvaccinated respectively, demonstrates unmistakably the protection of vaccination. All the vaccinated persons attacked were over 30 years of age, while 87, or 94·6 per cent. of the unvaccinated cases occurred in patients under 30, including 50 in children under 10.

Dr. Selwyn-Clarke's monograph on small-pox in the negro and negroid tribes of British West Africa furnishes a contribution of more than usual interest to the study of the epidemiology of small-pox. We summarise its essential features.

An extensive outbreak of this disease occurred in Accra, Gold Coast Colony, during 1920, no cases having previously been reported from this district since 1913, when one solitary case occurred. At the time of the outbreak the large majority of the native population of Accra were unvaccinated, to which fact must be attributed the severity of the type met with in most of the cases. While the native races generally of West Africa appear to be highly susceptible to the more severe types of small-pox, it was not found that the influence of any particular tribe had any bearing on the incidence-rate of the disease, with the single exception of the Kroos, among whom the incidence- and mortality-rates were unduly high, owing doubtless to the exceptionally insanitary conditions under which they live. The particular variety of the disease described by many observers under the name of variola sine eruptione was not seen, nor any case of alastrim or amaas, the 264 cases of small-pox admitted to the isolation hospital being included under the three headings of hæmorrhagic small-pox (5 per cent.), variola vera (75 per cent.), and varioloid or modified variola (19·3 per cent.). Some slight modifications of these from the corresponding European forms are noted, such as the fact that in the hæmorrhagic vesicular type there was an absence of the secondary rise of temperature in the pustular stage, and that in the purpura variolosa or black small-pox variety of the hæmorrhagic group death occurred between the seventh and seventeenth days, whereas in the English form death usually takes place between the fourth and sixth days. In the 199 cases of variola vera prodromal rashes were observed in very few, and here also the secondary rise of temperature during the stage of pustulation was frequently absent. Marks of successful vaccination were present in 66 per cent. of cases of this variety, the mortality rate in these being nil. The complications met with, which differed little from those of the European forms, included toxæmia, bronchitis, broncho-pneumonia, glossitis, pharyngitis, and various nervous disorders, the two complications which proved most frequently fatal being toxæmia and broncho-pneumonia, accounting for 53 and 10 cases respectively of the total 68 deaths. Five pregnant women attacked by the disease miscarried or gave birth prematurely, one case recorded in detail demonstrating the transmissibility of the infection, at any rate in a mother, to her suckling child in the pre-eruptive stage. In this particular case the mother died of hæmorrhagic small-pox, the infant developing a scanty eruption a week later (a fortnight after separation from its mother), and dying in three days. The incubation period of the disease was found to lie between 10 and 14 days, and was almost invariably 12 days, one case of a period of 23 days being, however, met with.

Dr. Selwyn-Clarke endorses the opinion of Dr. Wanklyn as to the non-infectivity of small-pox in the pre-eruptive stage, except in hæmorrhagic cases; but the virus appeared to be transmissible from the first appearance of the eruption until such time as the skin became entirely free from scabs, desiccated pustules, or desquamation. Apart from a rigid isolation of all patients, the most important preventive measure adopted was vaccination of the whole population of Accra and district, Dr. Selwyn-Clarke pointing out that the epidemic was undoubtedly brought to an end by reducing to a minimum the number of unprotected and susceptible persons, while the figures given show a reduction in the case mortality from 29·6 in the unvaccinated to less than 3 per cent. in the vaccinated. The modifying influence of successful vaccination performed during the incubation period was marked, even in several cases as late as the eleventh day, although experience may not altogether bear out Dr. Wanklyn's statement that efficient vaccination done within the first three days of exposure to infection will secure the vaccinated from attack. Vaccination, however, performed after the appearance of the eruption was found to be not only useless but definitely contra-indicated, owing to the increased discomfort caused to the patient. The whole report should do much towards stimulating investigation into the cause and prevention of this most fatal of the eruptive fevers.

PUBLIC HEALTH ADMINISTRATION IN SMALL AREAS.

THE difficulty in securing satisfactory sanitary administration in small areas with a sparse population is one of the standing obstacles to more rapid improvement in the public health in this country; and it is obvious that this difficulty is being felt even more in the United States. Thus in a paper by Mr. Fitz-Randolph, the Assistant-Director of the New Jersey State Department of Health, we are informed[1] that a radical change is needed. The small townships and even the boards of small incorporated municipalities cannot afford to pay administrators trained in sanitary science; adequate administration is impracticable "if each municipality is expected to maintain its own independent organisation"; and it is recommended that population groups of from 12,000

[1] Public Health News of the State, December, 1921.

to 20,000 people should be formed, for whom satisfactory administration in essentials might be secured at an expenditure of 50 cents. per capita. In order to secure this consolidation of small municipalities and townships into districts of suitable size, it is not proposed to depend on voluntary combinations of areas, which in the States, as here, have not been found to be stable or generally successful, but legislative enforcement by the State legislature to this end is recommended. Incidentally it is interesting to note the reaction of State officials to public health grants from the Federal Government for local or State administration. It is admitted that such grants may be made a potent weapon to compel efficiency; but it is "an insidious form of bribery," and Mr. Fitz-Randolph, like many other American Health Commissioners, doubts the ultimate wisdom of such local subsidies, whether from the Federal or the State Government. They "tend in a measure to pauperise municipalities, making them still more dependent on the State Government and more reluctant than they now are to assume their rightful responsibilities." We doubt whether this view will find general acceptance here; and even in the Geddes Report, there is no declaration in favour of the abolition of central health grants, but only a suggestion that block grants for special purposes should replace them. In this country, grants for special public health work have undoubtedly hastened progress in a large number of backward sanitary areas; and although it may be practicable to devise a system which will diminish the need for elaborate inspection of local arrangements, it is unlikely that this aid to enhancement of local activity in special forms of public health work can be dispensed with for some years to come.

TUBERCULOUS SILICOSIS IN AUSTRALIA AND ELSEWHERE.

A VALUABLE contribution to our knowledge of dust-phthisis has recently been published in Australia,[1] where a Commission of medical experts commenced early in 1920 a careful examination of miners employed at the Broken Hill Mines. Owing to a trade dispute the men had not been at work below ground for nearly 12 months, hence the findings represent a better condition than if work had been continuous up to the time of the inquiry. The mines are worked for mineral ores containing zinc and lead. The ores contain from 1·6 to 17·7 per cent. of free silica; from 12·8 to 18·4 per cent. of galena, sulphide of lead; from 19·2 to 29·2 per cent. of blende, sulphide of zinc; and varying amounts of manganous oxide. Inhalation of dust arising from such material can be traced, apart from its silica content, by finding lead, manganese, and zinc in the tissues. The proportion of free silica in the ore is less than occurs in the lodes of the gold-mines on the Rand or of the tin-mines in Cornwall. Mineral ores are found in veins running through country rock, and on the Rand and in Cornwall the country rock, which has to be disturbed to win the mineral ore, contains much free silica in the form of quartz and quartzite. At Broken Hill, on the contrary, free silica is practically absent from the average country rock of the lode. Owing to the cessation of mining operations no samples could be taken of the exact dust generated. But if, as is now generally accepted, the phthisis risk in metalliferous mining is especially associated with exposure to the dust of free silica, the risk to which the miners at Broken Hill are exposed should be less than that of many other metalliferous miners. A complete examination of 3967 mine-workers was made. Signs of pneumonoconiosis were detected in 193 persons; 90 were in the first stage, of whom 37 had worked in mines at Broken Hill only; 44 were in the second stage, of whom 8 had worked in mines at Broken Hill only; and 59 presented tuberculosis as a complication, of whom 25 had worked in mines at Broken Hill only. Simple tuberculosis with no pneumonoconiosis was found in another 39 persons.

The Commission finds that pneumonoconiosis arises in Broken Hill as a result of inhaling dust among persons engaged in the operations of drilling and blasting underground; and concludes that it is the dust that accompanies mining operations which, by passing into the lungs, occasions the pneumonoconiosis, on which tuberculosis may supervene later. The lungs of eight miners were analysed after death, when the ash was found to contain lead, manganese, zinc, and silica in amounts far in excess of those found in control lungs of persons who had died in Sydney. The dust particles present in the lungs were examined, when 3431 under 7·5 microns in maximum diameter were found as compared with 13 over 7·5 microns, a result which is in accord with observations made by Macrae in South Africa, and by others. No signs of pneumonoconiosis were detected in persons who had worked less than eight years as practical miners; and the disease, arising as a result of work at Broken Hill only, was found to progress so slowly as to cause no impairment of working capacity previous to infection with tuberculosis. An interesting point was the unusual prevalence among those examined of signs of cardio-vascular troubles, possibly to be attributed to absorption of lead; but the undue prevalence of Bright's disease among sandstone masons, exposed only to silica dust, should be kept in mind. Both the type of pneumonoconiosis found and its prevalence may be held to accord with what might be expected from a knowledge of the dust risk as disclosed by the chemical composition of the materials mined; thus 71·5 per cent. of those who had worked for 30 years and over, and 97·8 per cent. of those who had worked less than ten years, were found free from pneumonoconiosis. Clearly the Australian type is milder and its prevalence less pronounced than anything seen among the Rand gold-miners or Cornish tin-miners. The Report of the Technical Commission contains much information respecting the clinical signs and physiological conditions found, together with the age-distribution of the disease and its industrial relations; on these points the Report agrees, ceteris paribus, with what has been noted by previous observers.

Definite recommendations are made as to preliminary medical examination before engagement, and the non-employment of the tuberculous or of those with detectable signs of pneumonoconiosis. The Commission hold that those who contract pneumonoconiosis while at work should be withdrawn from the mines and provided, through some scheme, with agricultural employment; and further that, should they become tuberculous, they should receive compensation. Agricultural employment is, of course, the ideal one for such subjects, but it would be a mistake to suppose that they are debarred from all factory work, especially where sanitary precautions are observed and hygienic conditions provided.

[1] Report of the Technical Commission of Inquiry to investigate the Prevalence of Miners' Phthisis and Pneumoconiosis in the Metalliferous Mines at Broken Hill, Sydney, 1921.

TREATMENT OF GASTRIC ULCER: AN AGREED BASIS FOR CLINICAL PRACTICE.

KEEN debate on a medical subject in which the ablest experts take part has a natural tendency to bring out points of divergence rather than of agreement. Nevertheless, the basis of agreement, which is essential for application to clinical practice, may be large. In the current number of the *Middlesex Hospital Journal* Dr. T. Izod Bennett, after recalling the recent debate at the Royal Society of Medicine on gastric ulcer, its diagnosis and treatment,[1] summarises what is in his opinion the correct attitude for a practitioner to adopt when confronted by such a case. Many who were unable to be present at the debate, and others who were confused by the conflicting opinions expressed, will be glad to have such clear instructions as these: 1. Immediately treat all sources of focal sepsis in the mouth and naso-pharynx. 2. Select without delay the cases in which surgery is indicated. These include: (*a*) All cases with chronic pyloric

[1] THE LANCET, Feb. 11th, p. 277.

obstruction; (*b*) all cases which have relapsed after one course of thorough medical treatment; (*c*) all cases with a history extending over many years; (*d*) all cases with large ulcers adherent to surrounding structures; (*e*) practically all cases in which a test meal is retained in the stomach for more than six hours; and (*f*) all cases whose economic position makes prolonged medical treatment impossible.

It is surprising how large is the class of patients who must be placed in this last group. There can be no escape from the conclusion that the medical treatment of gastric ulcer is a difficult and protracted procedure. In the cases remaining for medical treatment, the apparent source of infection having been removed, the main lines of treatment recommended are as follows: (*a*) Secure true physiological rest for the stomach by keeping the patient in bed, by feeding him with liquid foods which will neither irritate the ulcer nor promote peristalsis, or, should he be a suitable subject, by direct duodenal feeding; (*b*) secure neutralisation of hyperacidity by means of atropin and alkalis; (*c*) continue treatment for a sufficient time to procure genuine firm healing of the ulcer, and control this opinion by radiographic examination; and (*d*) protect the patient against relapse by warnings against subsequent indiscretions, whether dietary or otherwise.

GONORRHŒAL MENINGITIS.

IN view of the rarity of authentic cases of gonorrhœal meningitis, not a little interest attaches to the case recently described by Dr. L. Lindenfeld,[1] of the Pathological Institute of the Wieden Hospital in Vienna. The patient was a man aged 53 with no history of venereal disease, who suddenly developed a septicæmic attack of unknown origin and died after seven weeks' illness. The autopsy showed a purulent spinal meningitis decreasing in intensity from above downwards, purulent inflammation of the cerebral meninges, suppuration in the left seminal vesicle, and a scar in the left epididymis. Smears of the pus from the seminal vesicle and the spinal meninges showed the characteristic intracellular diplococci which were also found in the scanty exudate in the cerebral meninges. Cultures on ascitic agar remained sterile. On a study of the literature, Dr. Lindenfeld was able to find 17 cases of gonorrhœal involvement of the central nervous system, consisting of 8 cases of myelitis and 9 of meningitis or meningomyelitis. Of these 9 cases, 4 were fatal, but in only 1, which was reported by Prochaska, was a careful autopsy made, corresponding in all essential respects to that of the present case. The clinical course of gonorrhœal meningitis shows nothing characteristic to distinguish it from meningitis due to other causes. Occasionally, as in the present case, erythemata have been described, which have been classified by Buschke into four groups: (1) Simple erythemata and scarlatiniform eruptions; (2) urticaria and erythema nodosum; (3) hæmorrhagic and bullous exanthemas; and (4) hyperkeratosis, which is characteristic of gonorrhœa. The histological findings in gonorrhœal meningitis are not specific, although there may be several differences of detail to distinguish it from meningitis due to other causes. Thus, in the present case, the exudate was not nearly so rich in fibrin as is the exudate in pneumococcal meningitis, and was of a denser consistency than the exudate in streptococcal meningitis.

INTERNATIONAL EXCHANGE OF LECTURERS.

THE friendly relations already existing between leaders of medical thought and practice of different nationalities are likely to be still further developed by the exchange of lectures delivered by distinguished foreigners in Paris and in London next month. In the grand amphitheatre of the Faculty of Medicine of Paris the following lectures will be delivered in English: The Circulatory Effects of Mitral Stenosis and Aortic Regurgitation, by Sir Sydney Russell-Wells, on May 6th; Trench Fever, by Sir Wilmot Herringham, on May 11th; Lymphatic Pathology, with Special Reference to Malignant Disease, by Mr. Sampson Handley, on May 13th; The Mechanism of Compensation in the Heart, by Prof. E. H. Starling, on May 18th; Acute Pancreatitis, its Diagnosis and Surgical Treatment, by Mr. H. J. Waring, on May 20th; and on Stereoscopic Vision and the Evolution of Man, by Prof. G. Elliot Smith on May 27th. In London on May 22nd, 25th, and 31st respectively, at 5 P.M., the following lectures by Professors in the Faculty of Medicine of the University of Paris will be given at the House of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1: Anti-anaphylaxie, by Prof. F. Widal, Lord Dawson of Penn presiding: De l'Erythrémie (Maladie de Vaquez-Osler), Sir Wilmot Herringham presiding: Des Reflexes de Défense, by Prof. J. Babinski, Sir James Purves Stewart presiding. These lectures will be delivered in French. The undermentioned lectures by Dutch professors will be given in English at the same place. On May 3rd Prof. C. Winkler, professor of clinical psychiatry in the University of Utrecht, will speak on the Human Neo-Cerebellum, Sir Frederick Mott, F.R.S., presiding; on June 12th Dr. Murk Jansen, professor of orthopædics in the University of Leiden, will speak on Injurious Agents and Growths, Prof. G. Elliot Smith, F.R.S., presiding; and on June 21st Prof. Hijmans Van Den Bergh, professor of pathology in the University of Utrecht, will discuss the Pathology of Hæmoglobin, when Sir Frederick Andrewes, F.R.S., will take the chair. Since the courses have been arranged in connexion with the University of London it may be hoped that students as well as qualified men may avail themselves of the opportunity of hearing of original work from its source.

BLOOD OR GUM.

DURING the war, when blood transfusion was called for on the grand scale as a life-saving operation, great efforts were made by many surgeons to carry it out, often under the most difficult conditions. But the process demanded sometimes impossibilities, and it was evident that an efficient substitute for blood was greatly to be desired. The introduction of the use of a solution of gum acacia during 1917 was therefore hailed as a great advance, and some surgeons believed that the great claims made for gum as a blood substitute were fully justified. Others, however, remained sceptical, and their scepticism seems to be justified by the publication of reports such as that by R. Charles and A. F. Sladden,[1] who showed that in two series of parallel cases the results with gum infusion were inferior to those obtained with blood, although the latter series included on the whole more desperate cases than the former. This has tended to be confirmed by laboratory experiments, F. C. Mann[2] showing that shock produced in animals was more successfully combated by blood transfusion than by gum. More recently gum infusion has often been used in treating surgical shock in hospitals and elsewhere, and good results have been reported. Nevertheless evidence to the discredit of gum continues to accumulate. During the last three years several investigators[3] have shown that a gum solution may have a deleterious effect in several ways. It may produce agglutination both intravenously and outside the body. It may cause pulmonary emboli and thrombi, accompanied by symptoms resembling those of anaphylaxis. It may, on the other hand, interfere with the normal coagulation of the blood, and so be harmful by discouraging hæmostasis. At least one death has been recorded which was definitely to be attributed to the use of gum.[4] Finally, in a recent paper,[5] Y. Henderson and H. W. Haggard have sought

[1] Medizinische Klinik, Feb. 5th, 1922.

[1] Brit. Med. Jour., 1919, i., 402. [2] Amer. Jour. Phys., 1919, 86. [3] Kruse: Amer. Jour. Phys., 1919, xlix., 137; P. J. Hanzlik and H. T. Karsner: Jour. Pharmac. and Exp. Therap., 1920, xiv., 379, &c.; Foster and Whipple: Amer. Jour. Phys., 1922, lviii., 393. [4] H. Olivecrona: Acta Chir. Scand., 1921, xlv., 1. [5] Jour. Amer. Med. Assoc., 1922, lxxviii., 698.

to show that the most important factor in a case of serious hæmorrhage is the acapnia produced by a deficiency in the number of blood corpuscles rather than the fall of blood pressure following decrease in blood volume. This theoretical explanation of the effects of hæmorrhage introduces many complex problems, but at least the experimental findings of these observers are clear in their implications. It was found that after animals had been subjected to a standard hæmorrhage, an intravenous infusion of gum acacia was "distinctly superior" to normal salt solution; but the animals receiving it were usually dead on the next morning! Replacement of the blood with gum did not relieve the air-hunger and its attendant muscular exertion and over-ventilation. Life was therefore only prolonged and not preserved. It rests with the advocates of gum infusion to bring forward more evidence of the clinical efficacy of this substitute for the physiological remedy.

VENTILATION OF PLACES OF ENTERTAINMENT: PROPOSED L.C.C. POWERS.

IN February, 1920, the London County Council represented to the Minister of Health that regulations should be made to secure the "more effectual perflation and ventilation" of places of public entertainment and the exclusion of children as a precautionary measure against the spread of epidemic, endemic, or infectious diseases, and that the Council should be empowered to enforce the regulations. At that time the Minister of Health was not satisfied as to the desirability of reimposing the Public Health (Influenza) Regulations of 1918 in any form. The Theatres Committee of the Council, having further considered the matter, are of opinion that the only efficient means of securing satisfactory atmospheric conditions in a place of public entertainment is the installation of an adequate system of mechanical ventilation, combined with a system of heating under which fresh air is warmed before entering the building. In new and reconstructed premises they have already required such an installation to be provided. In the case of premises, however, in which the ventilation arrangements are not up to the modern standard, the Committee consider the Council should have some power, in times of epidemic, to close such places as they may deem unsatisfactory "for short intervals," or to take "such action as may appear to the Council to be expedient." The Minister of Health is being asked to grant this power to the Council.

RENAL GLYCOSURIA.

IT is now well established that a patient who has dextrose present in the urine in considerable amount may not be suffering from diabetes mellitus. Our knowledge of this subject has steadily progressed since Klemperer originally drew attention to the condition in 1896, and the group of cases has now been studied by many observers in Germany, Austria, the United States, as well as in this country. In the *Practitioner* for February Dr. O. Leyton gives his own views of the condition, based upon 18 cases which he has himself observed. He disapproves of the alternative name of diabetes innocens, which was used by Salomon who described 10 cases in 1914, on the ground that although the disease is undoubtedly innocent there is no polyuria and therefore no diabetes. He also disapproves of the name renal glycosuria, which is used by nearly all the other observers on the ground that it is not proven that the kidney is at fault. The recent work of Hamburger, however, on the variations of the threshold of the frog's kidney is so suggestive that it is difficult to avoid the conclusion that the kidney is at fault. Leyton has suggested the name of negligible glycosuria. But while the glycosuria is certainly negligible when the diagnosis is made, no care should be neglected to establish the diagnosis. It is not sufficient, as Dr. Leyton seems to imply, to make an isolated estimation of the blood sugar some time after a carbohydrate meal, as a patient with a mild diabetes may have a normal blood sugar after a meal if he has ceased to pass sugar. It is advisable to estimate the blood sugar before giving a dose of dextrose, and to repeat the estimation 15, 30, 60, and again 120 minutes after the dose. The urine should be collected at the end of each hour and the sugar estimated. The amount of sugar to be given must be selected with care in a doubtful case as a large dose of sugar may do some damage to the patient. A dose of 10 g., sufficient in some cases as a preliminary dose, should, if well tolerated, be followed by 25 g. and 50 g. of dextrose. An obvious case may safely be given 50 g. for the first test. The sugar always rises in the blood after a carbohydrate meal, but different observers do not agree as to what percentage is pathological. Dr. Leyton thinks that the blood sugar should not rise above 0·15 per cent., whereas some observers think that it may rise to 0·18 or 0·19 per cent. At all events the blood sugar should not rise above the normal limits after the dose of sugar. If the patient passes this test he should then be given increasing amounts of carbohydrates in the diet and the total of sugar should be estimated. This test will show that the amount of sugar excreted is very nearly independent of the amount of carbohydrate eaten. The diagnosis should not be made unless such tests have been carried out, for if the patient comes through them, he may then eat an ordinary diet. A mistake in the diagnosis is fraught with dire consequences for the patient if he really has got diabetes mellitus. Dr. Leyton speaks of the glycosuria as "adietetic," since it is always present in the urine. This is not quite so, for even in these cases the greatest amount of sugar is usually post-prandial, and in some cases there is no sugar except after the meal.

INDUSTRY IN RELATION TO ALCOHOL.

THE influence of alcohol on the efficiency of industrial workers is a subject of great practical importance, and one in which we are all of us certain to take an increasing interest in the future, when we get more reliable information than is at present available as to the effects of prohibition in America. We therefore welcome the lectures on the subject which have recently been given by Sir Thomas Oliver before the Society of Arts and by Prof. E. L. Collis before the Society for the Study of Inebriety, abstracts of which appear elsewhere in our columns. These lectures not only summarise much of the existing information on the subject, but bring forward a number of fresh facts, collected from employers of labour and others. Both lecturers adopted a thoroughly scientific and unbiased attitude, and did not hesitate to point out the good qualities of alcoholic beverages, and the very natural tendency of the worker to indulge in them, not only because they slake the thirst created by many hours of laborious work in what is frequently a hot or a dusty atmosphere, but because they act as a direct sedative to fatigue. At the same time it must be admitted that the balance of the evidence they adduce is very strongly against indulgence in alcohol, and much of it points to the advantages of rigid abstinence. We read of one engineering firm who found that their employees lost so much time from their work that they made total abstinence a condition of employment. In consequence, the average time lost fell to 0·5 per cent., instead of the 10 per cent. usually met with in the engineering trade. Again, the trainer of the Newcastle United Football Club informed Sir Thomas Oliver that whilst most of the players of his club lose their value after 10 to 15 years' service, some of them still play an excellent game at the age of 40, and the majority of these men are total abstainers. Again, many of the men employed in Scottish glass works drink large quantities of beer, but Sir Thomas Oliver was informed that after 15 or 20 years' service these men could not compete in physical fitness with the abstainers. The men themselves recognised the fact, and as a result some of

the beer drinkers took to the oatmeal-and-water drink of their comrades with satisfactory results.

The influence of alcohol on the frequency of industrial accidents is discussed at some length by both lecturers, but admittedly the available evidence is not altogether conclusive. The increased number of accidents usually observed on Mondays may be due to other causes than week-end indulgence in alcohol. Still, it is difficult to escape the significance of the fact that at one iron and steel works the non-abstainers suffered 50 per cent. more accidents than the abstainers. whilst a benefit society found that non-abstainers suffered three times more accidents than the others. Much progress has been made in recent years. Sir Thomas Oliver states that 15 to 20 years ago, in the building trade, the men lost on an average a day per week from alcoholism, whilst at the present time the loss is almost negligible. In the shipbuilding trade, again, sobriety is steadily increasing. One large firm on the Clyde took a vote amongst their 2500 workers, and of the two-thirds who voted 31 per cent. were in favour of total prohibition, whilst another 25 per cent. supported some form of restriction. The outlook for the future is accordingly hopeful.

BACTERIAL FLORA OF THE PNEUMONIAS.

Sir Frederick Lister's work in South Africa on the inter-relations of the organisms composing the pneumococcus group, confirmed independently by workers at the Rockefeller Institute, is gaining general recognition. Dr. A. L. Urquhart, working at St. Thomas's Hospital, London, gave in our columns not long ago a useful bibliography of this subject. At a recent meeting of the Liverpool Medical Institution, Prof. Ernest Glynn, Miss L. Digby, and Dr. Wallace Jones presented an account of further investigations into the serological types of pneumococci present in pneumonia and their incidence. In examining 140 cases of pneumonic consolidation of the lung they found pneumococci present in 127 of these and failed to obtain this organism in 13. In 96 cases of lobar pneumonia the incidence of the various types, and the associated mortality, was found to be :—

Pneumococcus type	I.	II.	III.	IV.
Incidence per cent. of cases	46	24	2	28
Mortality per cent. of cases	34	36	50	11

These figures generally correspond with those obtained by other observers. It was not found, in the present series of cases, that infections by more than one type of pneumococcus were frequent. In a number of cases lung puncture was resorted to and this showed that the bacteria present in the depths of the organ were almost always pneumococci, the other organisms, such as streptococci and Pfeiffer bacilli, though not infrequent in the sputum, were extremely rare in the fluid obtained by direct puncture of the lung. In a few cases serum treatment was given in pneumonias due to Type I. pneumococcus, but these were too few in number to give any clear indication of the value of the method.

SYPHILIS IN RELATION TO INSANITY.

CONSIDERABLE interest attaches to the summary of results of autopsies in the Central Islip State Hospital, Long Island, N.J., published in a recent report of the United States Public Health Series (Dec. 20th, 1921). As is well known, our own national mortality statistics give only a small fraction of the deaths attributable to syphilis; and similarly only 7969 deaths from syphilis were given in the entire registration area of the United States during the year 1920. The series in question comprised 1183 autopsies, and syphilis appears as a primary, or important contributory, cause of death in 27 per cent. of cases taken consecutively without selection, and as a contributory cause of minor importance in 5 per cent. more. The series illustrates the value attaching to the statement and subsequent tabulation of secondary as well as of primary causes of death, which for some years past have been systematically practised in a supplement to each annual report of the Registrar-General of Births and Deaths for England. It is only when contributory causes, perhaps relatively remote in origin, are taken into account, that an approach can be made to an ætiological classification of causes of death which is not partially fallacious and misleading. Thus in the series here quoted we have 322 patients who died with syphilitic brain disease, 292 cases of general paresis, and 30 cases of cerebral syphilis, but in 73 of these 322 patients death was returned as due to pneumonia (47 cases); to a chronic accompanying condition, as tuberculosis or chronic nephritis (20), or to some other condition. In 65 cases other than the paretic group syphilis was present in a quiescent form, as shown by clinical or pathological findings or by a positive Wassermann reaction. The publication of careful observations similar to those indicated above is likely in time to prepare the way for a nearer approximation to a statement of the deaths which may properly be ascribed to syphilis; and it may be hoped that analogous figures will be forthcoming from a large number of institutions for the insane.

THE PASTEUR CENTENARY.

IN order to commemorate the centenary of the birth of Pasteur, the University and the town of Strasbourg, with the concurrence of the Pasteur Institute, and the approval of the family of Pasteur, propose to erect a statue facing the Strasbourg University, where Pasteur commenced his career as a professor. The inauguration ceremonies will take place on May 1st, 1923, and will include the unveiling of the statue and the opening of an Exhibition of Hygiene and Bacteriology. This exhibition will be designed to illustrate the advances made in various branches of science as the result of Pasteur's discoveries. The Commissioner-General, Prof. Borrel, is anxious to be furnished with the names of manufacturers and business firms in this country to whom the exhibition might be of especial interest. All who can assist in this way are requested to communicate with Prof. Borrel, 3, rue Koeberle, Strasbourg. At the same time a Congress of Hygiene and Bacteriology will be held for the discussion of questions relating to the prevention of disease. With the object of showing the sympathy of this country with the projects of the French Committee, a British Committee composed of the following members has been formed: Sir Charles Sherrington, P.R.S. (chairman); Mr. A. Chaston Chapman, F.R.S. (treasurer); Mr. H. E. Field; Prof. Percy F. Frankland, F.R.S.; Sir John M'Fadyean, M.R.C.V.S.; Prof. C. J. Martin, F.R.S.; Sir W. J. Pope, F.R.S.; Sir James Walker, F.R.S.; and Sir Almroth Wright, F.R.S.

The diverse interests of those who are promoting this celebration of the hundredth anniversary of Pasteur's birth—he was born at Dôle in Jura on Dec. 27th, 1822—mark more plainly perhaps than anything else the wonderfully wide fields of natural knowledge and practical life of which his discoveries were the most potent origin. Microbes of one kind and another are the dominant organisms of the earth. Their existence and something of their nature had been known or suspected for many years before Pasteur and his conspicuous service to mankind came to indicate the far-reaching importance of what they did. Leeuwenhoek in the seventeenth century knew what microbes looked like, chemists and brewers and common men had known for all time of the strange changes that occurred in various liquids of organic origin; by the happy combination of biology and chemistry Pasteur found a common basis to unite the two sets of observations into a new conception of extraordinary fertility. Its ramifications are now so blended with all our thoughts that it is as difficult to realise what the world was like before Pasteur as it is to understand the mentality of Neolithic man. That he found methods for treating rabies, for making beer keep, and so forth is relatively immaterial; to persuade his fellows that microbes are among the most important inhabitants of the world was an

achievement in parallel with the revolution of thought which had its source in the origin of species. Humanity is Pasteur's debtor; is it too much to hope that all Europe will be welcomed at Strasbourg next spring to do homage to him? A more appropriate place would be hard to find, for it was there that Pasteur went to his first chair in 1849, and there that the daughter of the rector converted him, in four months, from his ideal of celibacy to a married man.

It is hoped that those who desire to contribute to the Memorial Fund will send their contributions before the end of June to the general secretary and treasurer, Monsieur Th. Héring, 6, rue des Veaux, Strasbourg, or to Mr. A. Chaston Chapman, F.R.S., The Institute of Chemistry, 30, Russell-square, London, W.C. 1.

THE POSITION OF THE VOLUNTARY HOSPITALS: EDUCATIONAL COÖPERATION.

THE Executive Committee of the Combined 1922 Appeal on behalf of the hospitals in Greater London (19, Berkeley-street, W. 1) announce that, with a view to organising a campaign in connexion with schools and other educational establishments in Greater London, an Educational Branch has been established. Lord Burnham will be chairman of the Central Committee dealing with educational help for the Appeal; Mr. E. A. H. Jay, LL.D., a former chairman of the L.C.C. Education Committee, has been appointed Director of the Education Branch. Representatives of the London University, the different training colleges, the Teachers' Association, the Association of Secondary School Teachers, the Preparatory School Teachers' Association, and representatives of private schools have been invited to a conference on May 9th to discuss arrangements.

It is now announced that the Combined Appeal will be for the fourfold purpose of reopening closed beds, meeting the higher costs of materials and re-equipment until prices become more normal, paying off the more pressing debts of the London hospitals, and securing new subscribers. Steps are to be taken contemporaneously to develop new permanent sources of income by contributory and other schemes. There have already been several conferences with secretaries of general hospitals in London to discuss organisation, and another conference will take place after Easter, at which more than 100 hospitals in all will be represented, and following which the final plan of campaign will be settled.

Donation accounts on behalf of the Appeal will be opened on Tuesday, April 18th, by some 950 banks, inclusive of head offices and branches, in the metropolitan area.

Sir Humphry Davy Rolleston was elected President of the Royal College of Physicians of London at an extra Comitia of the College held on Monday last.

THE Morison lectures on the Evolution of the Human Intellect will be delivered by Prof. G. Elliot Smith, F.R.S., in the Hall of the Royal College of Physicians, Edinburgh, on May 1st, 3rd, and 5th, at 5 P.M.

THE next session of the Dental Board of the United Kingdom will commence at 2 P.M., on Tuesday, May 9th, when the Right Hon. F. D. Acland, M.P., will take the chair and give an address. The Board will then sit from day to day until the termination of its business.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The meeting of the Maternity and Child Welfare Group of this Society, fixed for April 20th, is postponed till May 18th, when Dr. R. C. Jewesbury will read a paper on Breast Feeding. The Metropolitan and Home Counties Sub-Group will meet as arranged on April 26th at 5.15 P.M., when Dr. H. C. Cameron will speak on Vomiting in Infancy: its Meaning and Treatment.

A PLEA FOR UNIVERSAL NATIONAL TERMS IN DESCRIPTIVE HUMAN ANATOMY.

WITH OR WITHOUT A LATIN INTERNATIONAL TERMINOLOGY.

BY WM. CUTHBERT MORTON, C.B.E., M.A. (CLASSICAL FIRST), M.D. EDIN.,

HONORARY DEMONSTRATOR OF ANATOMY IN THE UNIVERSITY OF LEEDS; LATE CAPTAIN R.A.M.C., IN CHARGE OF THE DEPARTMENT OF MUSCLE RE-EDUCATION, 2ND NORTHERN GENERAL MILITARY HOSPITAL (ORTHOPÆDIC).

IN September, 1920,[1] THE LANCET published for me a Plea for Simple Anatomical Names based on the Free Use of the National Language, and the next issue contained a criticism under the heading Anatomical Terminology. My critic thought it "probable that the B.N.A. in its present form will fail to hold its ground," but there is no sign of this in either America or the Dominions; and indeed a teacher of experience told me some time ago that there was no little danger of the Basle Nomina Anatomica being adopted in this country out of sheer weariness and disgust at the prevailing muddle. The best way to ensure that the B.N.A. will not hold its ground is to drive it out.

I hope soon to venture to suggest the lines along which it might be possible to have the national terminologies in harmony, and so to dispense with an international terminology. Meanwhile, I wish to show my critic that, far from wishing to thrust new Latin names down the throats of an unwilling medical public, I would personally much rather discard as many Latin names as possible. It has been suggested to me that I should give a few quotations from Quain and other standard books illustrating the different styles of anatomical writing which at present prevail, giving in a parallel column examples of how these might be rendered with the use of a simpler terminology. Speaking generally, anatomical writing is either descriptive or onomatotic:—

1. *Description.*

In the descriptive style, excellent examples of which abound, the simplest and most direct words are used with the result that anyone who understands the description will have no difficulty with any reasonable terminology. As a short example we may take the following:—

"The scapula is placed on the upper and back part of the thorax, and forms the posterior part of the shoulder-girdle. It is not attached directly to the axial skeleton but is articulated with the outer end of the clavicle, and from it is suspended the humerus in the shoulder-joint."

2. *Onomatosis.*

The nomenclaturative or onomatotic style (*nomenclaturatio* vel *onomatosis*) on the other hand or *manus* adopts and often sacrifices the description to the *necessitates* or needs of terminology (*terminologia* vel *nomenclatura*), and *time* or *tempus* and *spatium* (space) are as nothing when the *diabolus terminologiæ* (vel *nomenclaturæ*), or devil of terminology (or of nomenclature), drives.

A. *Onomatosis simplex.*—The following may be cited as an example:—

"It consists of a triangular blade, the *corpus*, supporting two large processes. The surfaces of the body are anterior and posterior, *facies costalis* and *facies dorsalis*; the borders are the *margo superior*, the *margo vertebralis*, the *margo axillaris*, the angles are the *angulus inferior*, the *angulus medialis*, and the *angulus lateralis*. The lateral angle being the thickest part of the bone, and bearing the articular surface, *cavitas glenoidalis*, is sometimes distinguished as the *head*, which is supported upon a neck, *collum scapulæ*. The processes are an anterior, the *processus coracoideus*, and a posterior, the *spina scapulæ*, which is produced into the *acromion*."

It consists of a triangular blade or body supporting two large processes. The surfaces of the body are anterior and posterior; the borders are upper, posterior, and outer; the angles are lower, upper, and outer. The outer angle, which bears the cup-like articular glene, is the thickest part of the bone and is supported upon a neck. The processes are the corax, which is anterior and the spine which is posterior and is produced into the acromion.

In the most detailed description of the scapula no Latin terms are needed except scapula, acromion, corax, and glene, and these by the rules of the game are English. We may

[1] THE LANCET, 1920, ii., 513.

speak of the shoulder-blade, the summit of the spine, the beak, and the cup, but when adjectives—and above all compound adjectives—are needed, the ex-Latin forms are necessary—e.g., the posterior-scapular artery, the coraco-acromial ligament, the glenal cavity. There is no occasion for such a Latin term as *tuberositas infraglenoidalis*, since "the infraglenal tuberosity" is only another way of saying "the rough area below the glene." An example of such onomatosis may be given from the books.

"The dorsal surface is divided by the spine into two unequal parts, the upper of which is the *fossa supra-spinata*, and the lower the *fossa infraspinata*. The supra-spinous fossa . . . ."	The dorsal surface is divided by the spine into two fossæ, an upper and a lower, of which the latter is the larger. The supra-spinous fossa . . . .

When a passage has been changed from the nomenclaturative or onomatotic to the descriptive style, it is often found to belong to the great class of things which were better said otherwise; sometimes complete recasting is the only way to make it satisfactory.

B. *Onomatosis latinitaturiens* (*or Latin itch*).—Of the many varieties of the nomenclaturative or onomatotic style (all of which tend to run into one another) one of the most common is the latinitaturient, a *modus describendi* which is a *tribulatio infinita* to the *cerebrum lassum* of the *lector*.

"Fossa cranii anterior.—The fossa cranii anterior lies above the orbital cavities and the nasal chambers. Its floor is formed on each side by the thin *pars orbitalis* or *orbital plate* of the *os frontale*, and towards the middle line by the *lamina cribrosa* of the *os ethmoidale*. More posteriorly, each half of the floor is completed by the *ala parva*, and by a part of the *corpus ossis sphenoidalis*."	Anterior fossa of the skull.—This lies above the orbital and nasal cavities. Its floor is formed on each side by the thin orbital plate of the frontal bone and towards the middle line by the cribrous plate of the ethmus. Further back, each half of the floor is completed by the small wing and a part of the body of the sphen.

C. *Onomatosis tabulatoria*.—Another form of the nomenclaturative style is the tabulatory, in which the nomenclature is first tabulated and then explained.

"Lateral surface of the frontal lobe.—On the lateral surface of the frontal lobe the following sulci and gyri may be recognised:— Sulci { Sulcus frontalis superior. / Sulcus frontalis inferior. Gyri { Gyrus frontalis superior. / Gyrus frontalis medius. / Gyrus frontalis inferior. *Sulcus Frontalis Superior.*—The superior frontal sulcus extends anteriorly from the sulcus præcentralis superior. *Gyrus Frontalis Superior.*—The superior frontal gyrus lies above the superior frontal sulcus. *Sulcus Frontalis Inferior.*—This lies at a lower level than the superior sulcus of the same name. The posterior end of the inferior frontal sulcus . . . . *Gyrus Frontalis Medius.*—The middle frontal gyrus is the broad convolution which lies between the superior and inferior sulci. *Gyrus Frontalis Inferior.*—The inferior frontal gyrus is that part of the lateral surface of the frontal lobe which is placed anterior to the inferior præcentral sulcus and below the inferior frontal sulcus."	Lateral surface of the frontal lobe.—The following sulci and gyri may be recognised:— Sulci { Upper. / Lower. Gyri { Upper. / Middle. / Lower. The upper gyrus lies along the upper border. The upper sulcus passes forwards from the upper præcentral sulcus between the upper and middle gyri. The broad middle gyrus lies between the upper and lower sulci. The lower gyrus lies below the lower sulcus, passing forwards from the lower præcentral sulcus.

This should be recast, since after all it says no more than that:

From the præcentral sulci two others pass forwards and mark out this part of the lateral surface of the frontal lobe into an upper, a middle, and a lower gyrus, of which the middle is the broadest.

To know all is to forgive all. How then can we condemn the eminent surgeon who writes: "The nasopharynx should be inspected by means of a post-nasal mirror or by digital exploration with the index finger"? Inspection by digital exploration with a finger is indeed a fine art!

D. *Onomatosis repetitiva*.—The onomatotic style often leads to unnecessary repetition. As the heathen when they pray use vain repetitions, thinking that they will be heard for their much speaking, so the devotees of the repetitive style seem to believe that their words will be better understood and remembered for their much repeating. This style has been illustrated in the last example or two. Its baleful influence spreads beyond the "horizon of anatomy," as may be seen in the following example taken from a physiological text-book. A budding consultant told me not long ago that he never sends anything to be published without giving it a final reading in order to replace every Anglo-Saxon word possible by one derived from Latin or Greek. "It sounds so much better," said this Johannifilian.

"The auditory area comprises an audito-sensory region, to which the auditory projection-fibres are distributed, and an audito-psychic region, connected with the receptive district by association-fibres. The audito-sensory area is located in the temporal lobe, and has been supposed to be limited to the middle region of the superior temporal convolution, the audito-psychic area being adjacent to it. The superior temporal convolution is probably the chief centre for hearing, but there may be subsidiary areas outside it, since Schafer has shown that removal of the superior temporal convolutions alone from both sides in monkeys does not result in complete deafness. Stimulation of the superior temporal convolution in monkeys is followed by pricking of the opposite ear and turning of the head towards the opposite side."	The *auditory* area comprises a sensory region to which the projection-fibres are distributed, and a psychic region connected with the sensory by association-fibres. The sensory area is in the temporal lobe, and has been supposed to be limited to the middle part of the upper convolution, the psychic being adjacent to it. The upper convolution is probably the chief centre, but there may be subsidiary centres outside it, since Schafer has shown that in monkeys removal of the upper convolution alone from both sides does not result in complete deafness. Stimulation of the upper convolution in monkeys is followed by pricking of the opposite ear and turning of the head towards the opposite side.

Et tu, Physiologe! again:—

"Two openings are present in the medial wall of the tympanic cavity, both closed by membrane in the fresh condition. One, the fenestra ovalis (fenestra vestibuli), is oval in shape: the other, the fenestra rotunda (fenestra cochleæ), is circular and lies below and behind the fenestra ovalis." In other words:— There are two openings. One, the oval opening (opening of the vestibule) is oval in shape; the other, the round opening (opening of the cochlea), is round.	On the inner wall of the tympanic cavity are two openings or fenestræ which in the fresh condition are closed by membrane. One is oval and leads into the vestibule; the other, which lies below and behind the oval, is round and leads into the descending perilymph canal of the cochlea.

E. *Onomatosis comparativa*.—Comparative onomatosis aims at reproducing both the British and the Basle terminologies.

"The cerebellum is connected with the medulla oblongata by the restiform body or superior cerebellar peduncle on each side, with the pons by the two brachia pontis or middle cerebellar peduncles, and with the mid-brain by the two brachia conjunctiva or superior cerebellar peduncles."	The cerebellum is connected on each side with the medulla, pons, and mid-brain, by its lower, middle, and upper peduncles.

F. *Onomatosis meticulosa*.—For example:—

"The superior colliculus of the corpora quadrigemina."	The upper quadrigeminus.

G. *Onomatosis gnathoclastica*.—This is the jaw-breaking variety.

"Rami cutanei ramorum musculorum (*sic*) ad musculos adductores arteriæ profundæ femoris."	Cutaneous offsets of the muscular branches to the adductor muscles from the deep femoral artery.
"Musculus crotaphitico-buccinatorius."	Buccinator.
"Musculus petro-salpingo-staphylinus."	Levator of the soft palate.

H. *Onomatosis archaica, and onomatosis denominativa*.—These need only be mentioned. Enough has been said to show that onomatosis is a terminological hypertrophy which deforms and impedes anatomical description. Anonomatosis is physiological, but when the products of this phase interfere with the proper function of terminology it is time to reverse the process and let catonomatosis restore equilibrium at the higher level required by the advance of the science.

Conclusion.

There are now in Great Britain two anatomical parties, each backing its own nomenclatures, neither recognising the other's terms. There are also some anatomists who are dissatisfied with both sets of terms and are trying to evolve a third. Then there is the medical profession, in which many teachers, graduates, and students are alike tired of the confusion. Lastly, there is myself who, though only an anatomical babe and suckling (Micranatomiculus infans suctorius), hope to be able in some way to help towards a solution. Does my critic of two years ago really think that I am only trying to thrust new Latin names down the throats of an unwilling medical public? When will Britain and America realise that the Britameric language is good enough for Britameric science?

MEDICINE AND THE LAW.

Hospitals and Cases of Attempted Suicide.

DIFFICULTY has arisen recently in the admission to voluntary hospitals of patients suffering from the results of attempted suicide from the necessity for keeping them under observation more close than would be required for their treatment and nursing. The question involved is who is to be pecuniarily responsible for watching the patient when the police bring him in and supply the watcher? The desire on the part of hospitals and police alike at present is to avoid any expenditure which is not in the nature of an obligation. At the Ashton-under-Lyne Infirmary, a voluntary hospital, recent cases of attempted suicide have been refused admission, and the committee have informed the police that as the practice of sending an officer to remain on duty in the ward has been discontinued, such cases cannot be taken in owing to the extra cost which they involve. Two cases at least of cutthroat, since followed by death, have thus found their way to the Poor-law infirmary, and the guardians have communicated with the Home Secretary in order to ascertain his attitude as to their position in the matter. A reply appears to have been received of an inconclusive character, but containing a phrase to the effect that no regulation of the Home Office calls upon the police to provide an officer to watch over cases "where the patient is not under restraint."

The intended application of the last phrase is not clear, and the question is of interest to all voluntary hospitals. Suicide patients naturally divide themselves into two classes, those brought in by the police, and those brought in by other people, such as relatives or friends. Presumably, however, a hospital would not call in the police in the case of the latter unless obliged, and if the police were so summoned the patient would in effect become their prisoner, as it would be their duty ultimately to make the usual criminal charge against him. In the more usual case where the police bring to the hospital a patient who has tried to kill himself in some public place or in private premises, he is brought as a prisoner to be ultimately charged as such, but in need of immediate care and treatment. If he had no such need he would be simply a prisoner, and in either case he may be tried for an offence against the law; there are therefore obviously two reasons for having him watched, first, that he may not repeat his attempt; and, secondly, that he may not escape. The hospital is bound to prevent so far as possible the suicide of any ordinary patient likely to attempt his own life, but it cannot be fairly argued that it should be saddled with such prevention on behalf of persons known to be dangerous to themselves, amenable to the law, and brought to its wards by the law's officers. In no case has it any duty or indeed right to keep in custody persons fit and desirous to go out. Nevertheless, so far as London is concerned, we are informed that the Commissioner of Police for the metropolis last year issued an order that his men are not to wait in the wards with cases of attempted suicide. What, then, is the hospital to do? If a man is brought in, the saving of whose life is a question of minutes, he can hardly be refused admission; nor can it be right that the police should leave him there undertaking no responsibility, but saying in effect, "He can be nursed and guarded by the hospital, and when he is well enough to leave it we will arrest and charge him."

In the City of London we believe the police will supply a watcher if requested, but the city police will have nothing to do with a patient emanating from outside the city's boundary. He therefore has to be watched at the expense of the hospital at a cost which may be considerable. It is obvious that the police can hardly be expected to take care of patients in whom they are not interested as prisoners. Relatives may possibly be utilised for that purpose in some of those cases which they have themselves brought in, but generally the hospital will either have to reject those who have attempted suicide altogether, turning them over to the Poor-law authorities, or they must undertake the expense attaching to their supervision.

What appears to be required is a definite instruction imposed by the central authority, the Home Office, upon the police generally, to look after its prisoners, as long as any voluntary hospital is willing to accept them. There should also be a decision of the same authority as to whether such prisoners should be taken to a Poor-law institution in the first instance or to a voluntary hospital where both are equally available.

The Regulation of Lead Poisoning.

The historian of industrial medicine must always pay considerable attention to the subject of lead poisoning, not merely on account of the damage it has caused in the past—although that has been by no means inconsiderable—as for the reason that this essentially occupational disease has led to pioneer legislative measures aimed at its control and prevention. Lessons so learned have been extended to protection against other industrial risks and to the maintenance of general health. A useful volume has just been issued which sets forth the text of the laws and regulations relating to lead poisoning[1] prevailing to-day in different countries. The subject-matter is grouped according to the various industries in which lead and its compounds are manipulated, whether the mining or smelting of lead, the manufacture of white lead, or the use of lead compounds in other industries such as the making of pottery and tinning of metal articles. No effort is made to state the sequence of events which led up to the present state of the law; but some indication is given, at least for Great Britain, of the satisfactory results obtained. Thus, in the white-lead industry, the annual average of cases in 1900–04 was 183, in 1915–19 it was 17; while in the pottery trade it was 445 in 1896–98, 119 in 1900–04, 67 in 1910–14, and only 19 in 1915–19. These reductions have been obtained during a period of great industrial expansion, with an increase in numbers employed, and so of those exposed to risk, and notwithstanding the coming into force of the Workmen's Compensation Act in 1907, which gave compensation, among others, to those afflicted with industrial lead poisoning. The question of compensation is dealt with in a special chapter wherein the effect, through the tendency to notify milder cases than before, is exhibited; thus the proportion of severe cases which from 1900–04 was 33·2 per cent. of all cases notified, had fallen by 1910–14 to 18·4 per cent.; while moderate cases which formed 20·8 per cent. of the cases in 1900–04 had risen to 32·2 per cent. in 1910–14.

We note that our own code of regulations is more complete than that of any other country, and that our overseas dominions have adopted our lead by establishing regulations on similar lines. Continental countries such as France, Belgium, Austria, Germany, Switzerland, and the Netherlands have followed suit, while Greece and even Russia, previous to the debacle, have adopted useful precautions. America up to the present appears curiously behind, since only lead smelting, and that only in New Jersey, seems to be controlled by regulations. Italy and Spain do not appear in the list. Anyone perusing this document must be struck by the manifold uses to which lead is put and the great variety of industries in which it is used, and so will appreciate the difficulties which surround the legal control of even so definite and preventable a disease as lead poisoning.

"Murder by Throttling."

Leave to appeal against his conviction was refused by the Court of Criminal Appeal in the case of James Atkins, sentenced to death by Mr. Justice Horridge at Derby assizes. The prisoner, it will be remem-

[1] Laws and Regulations Relating to Lead Poisoning. Gilbert Stone. Pp. 247. H.M. Stationery Office, Imperial House, Kingsway, London, W.C. 2. 1922. Price 5s.

bered, was indicted for the murder of his wife, whose body was found buried in his allotment. The most prominent ground of appeal put forward was that in the special circumstances the judge should have warned the jury to accept the medical evidence with the greatest caution, or, as the court expressed it, "scepticism." To this the Lord Chief Justice, who delivered the judgment of the court, declined to accede, holding that the evidence of death by asphyxia was ample. There was little other evidence in the case, except that proving general circumstances such as infidelity on the part of the prisoner, and an admitted quarrel with his wife out-of-doors, following which, he said, she ran from him, and was found by him lying dead on a heap of stones, after which he buried her to avoid awkward questionings. The medical witness who had made a post-mortem examination had said that lividity and discolouration of the face and neck, deep congestion of the lungs, considerable effusion of blood in the skull, in conjunction with a normal heart, and the absence of any traces of disease or of any seizure, had led him to the conclusion that death was due to asphyxia from violence. It might have been produced by the prisoner placing his hands over the woman's mouth and nose, and so causing suffocation. It is of some interest to note that precisely the method above suggested by the medical witness was the way in which all the murders of the infamous Burke and Hare were committed in 1828. This was made clear by Hare when he turned King's evidence, and was corroborated by medical evidence in the one case tried, that of the old woman Docherty.

Public Health Services.

THE CONTROL OF MEDICAL BENEFIT.

THE text of the statement read by Sir Arthur Robinson at the conference on March 30th between representatives of the Ministry of Health and of the Insurance Acts Committee may be seen in the Supplement to the *British Medical Journal* of April 8th. From this statement it is perfectly clear, as we surmised last week, that the offer by the approved societies of the extra 2*s*. 6*d*. to make up the capitation fee of 9*s*. 6*d*. until the end of 1923, was made in exchange for some privilege or power not hitherto possessed by these societies under the existing law and regulations. It was not made clear, in the discussion following the statement, exactly what this privilege is to be. Perhaps no equivalent was actually specified. Two sentences in the statement may be quoted (the italics are ours):—

". . . In return for accepting these new charges the approved societies have made it clear that they intend to claim a voice in the negotiations with the medical profession both in regard to the capitation rates and the conditions of service after the expiry of the present agreement at the end of 1923.

"In view of the *extent of the societies' contribution* to the cost of medical benefit under the new scheme, it is difficult to contest their right to be represented in any future negotiations with the profession."

We read the phrase "a voice in the negotiations" to mean setting the standard of medical service and determining the monetary value to be attached to the services demanded. Many approved society officials make no secret of their low estimate of insurance practice in general. These officials are bound to act in what they believe to be the interests of their own society, which are not necessarily the interests of its individuals, when they are sick and in need of medical aid. From the commonwealth point of view they are hardly the best judges of the lines upon which the medical service should be developed. With the vague pledge given it may be difficult for the Minister and his advisers to resist the demands of the societies, however, whether they appear to be in the public interest or not. The Minister will find himself squeezed between pressure of Parliamentary control above and resistance of approved society demands below, and in any such compromise the medical service will stand to suffer. The new arrangement will weaken the hands of the Minister and his advisers, and we would urge him to reconsider the consequences of accepting the offer made to him. As well might the medical profession insist on a voice in the negotiations between the Ministry and the approved societies as to the regulations under which they perform their part of the insurance scheme. A good deal of criticism of society methods heard by doctors in the course of their work might be presented for their consideration. This is not a time for recriminations, but it follows that if freedom from friendly society control is to be taken from the doctors, the autonomy of the approved societies cannot reasonably remain intact.

The only control which can be tolerated by medical men who serve in the National Health Insurance scheme is the control of Parliament through the Ministry of Health. The secretary to the Ministry does not appear to appreciate the real meaning of the new move; he admitted that he could not speak as to the motives of the societies. Conferences between the representatives of the profession and the approved societies are to be desired. Although an individualistic profession may in some cases resent even the limited and supervised control of the Ministry of Health, a return to capricious and soulless control by the friendly societies is quite unthinkable. We speak only of control. Constant interchange of view would lead to better mutual understanding. Much remains to be done to ensure trust and esteem on each side; but the restoration of anything like the circumstances between medical practitioners and the approved societies as they existed before the Insurance Act would belittle the general practitioner service, lower the self-respect of insurance practitioners, and alienate the goodwill of the medical profession as a whole.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. (D) A. Macpherson to be Surg. Lieut.-Comdr. (D).

Surg. Comdr. C. J. Aveling to the *Vernon;* Surg Lieut.-Comdr. G. E. Heath to R.N. Hospital, Plymouth.

ROYAL ARMY MEDICAL CORPS.

The undermentioned temp. Capts. relinquish their commns. and retain the rank of Capt.: G. S. Livingston, T. E. Amyot, W. Astin, W. Cooper, and H. Slater.

ARMY DENTAL CORPS.

Lt. (temp. Capt.) J. Marron to be Capt.

ROYAL AIR FORCE.

V. R. Smith is granted a short service commission as a Flight Lt.

Temp. Capt. C. Fox-Pitt, Dental Surgeon, is granted a temporary commission as a Flight Lt. while attached for duty with the R.A.F.

Flight Lt. S. E. Duff resigns his short service commission, and is permitted to retain the rank of Capt.

WAR DECORATIONS.

The following decorations have been awarded for distinguished service rendered during the war, and the King has given unrestricted permission to the recipients to wear the decorations: Col. C. A. Hodgetts, C.A.M.C. (Officer of the Ordre de Leopold), and Bt. Col. J. Paul Bush, R.A.M.C., T.F. (Officer of the Ordre de la Couronne), both conferred by the King of the Belgians; Temp. Capt. C. G. Harmer, R.A.M.C. (Chevalier of the Légion d'Honneur) conferred by the President of the French Republic; and Capt. Myer Coplans, R.A.M.C., T.F. (the Silver Medal "al merito della Sanità Pubblica"), conferred by the King of Italy.

MANCHESTER AND SALFORD SKIN HOSPITAL.—At the annual meeting of the Manchester and Salford Skin Hospital the report showed that during last year the attendances reached 69,024—61,285 ordinary out-patients and 7739 X ray patients; the number of in-patients 347. In all £2228 were contributed by patients. The ordinary income was £8817 and the expenditure £9167.

Correspondence.

"Audi alteram partem."

SILICOSIS AND TUBERCULOSIS OF THE LUNGS.

To the Editor of THE LANCET.

SIR,—The principal trades in Leicester are the manufacture of boots and shoes and of hosiery. It is well known that workers in the boot and shoe factories suffer more severely from phthisis than do those in hosiery factories. The Medical Research Committee (now Council) appointed an "Investigation Committee upon the Incidence of Phthisis in the Boot and Shoe Industry"; their report was published in October, 1915. It states that "while there is little difference between the general health of shoemakers and that of all occupied males, the death-rates from phthisis in the case of shoemakers are very much larger," and "Phthisis is especially prevalent among shoemakers, without any associated prevalence of lung disease or alcoholism; its prevalence, therefore, is a special phenomenon." Workers in the wool and worsted manufactures do not suffer from phthisis nearly so much. The table on p. 23 of the report gives the proportionate mortality of phthisis in a trade to total deaths in that trade, and it shows that at all ages the percentage is greater in the boot and shoe factories than in the hosiery trade, and in the age-period 35–45 it is nearly twice as great.

What is the cause of this great difference? The workers in both trades are drawn from the same social class, live in the same kind of house, under similar economic conditions, and are therefore comparable. The Special Investigation Committee could find no special cause operating in the case of boot and shoe workers, and ascribed the mischief to defective general hygienic conditions, such as want of light, inadequate ventilation, and sedentary nature of the occupation.

There has been much discussion recently upon the effects of siliceous dust in producing phthisis, and some writers have insisted that it is the effective predisposing cause of the disease, as in the printing trade, for example. In THE LANCET of July 9th, 1921, pp. 83 and 112, you drew attention to the experiments of Dr. W. E. Gye and Dr. E. H. Kettle upon the influence of silica on the susceptibility of animals to infection by the tubercle bacillus; you say: "Silicic acid or even silica dust sensitises the tissues to the tubercle bacillus."

It occurred to me that the comparative amount of silica present in the dust in the workshops of a boot factory and a hosiery factory might possibly give the clue to the cause of the difference in mortality from phthisis in them, and that at any rate it would be worth investigation. I therefore wrote to the National Institute for Medical Research at Hampstead to ask them to undertake the analysis of dust from the two kinds of factories, and I was referred to Dr. Leonard Hill, F.R.S., who had been a member of the Special Investigation Committee, and he most generously undertook the necessary work. Samples of dust were sent to him from the floor-sweepings, from dust on beams, and that collected on exhaust fans from a boot and shoe factory and from a hosiery factory, the two buildings being strictly comparable as each belonged to a leading manufacturer in his own industry. The following is Dr. Hill's report and conclusions:—

DEAR DR. PRATT,—We have now arrived at conclusions with regard to the question you raised as to the possible influence of silica dust on the production of phthisis in the boot and shoe industry. We would point out that it is generally agreed that phthisis due to inhalation of free silica dust comes on in the more advanced period of life, and that the lungs of those who are subject to this form of phthisis show noticeable evidence of fibrosis, and on analysis their lungs yield a marked excess of silica. Moreover, such phthisis is accompanied by excess of mortality from pneumonia and bronchitis. In the case of the boot and shoe industry, no evidence has been advanced as to silicosis of the lungs.

If we examine the comparative figures for phthisis given in the Registrar-General's returns for different occupations we find: For clergy the figures are for all ages 45, and for young age phthisis 17·3; for barristers and solicitors, 58 and 17·5; for schoolmasters, 70 and 24; for commercial clerks, 193 and 66·9; for boot and shoe workers, 235 and 93·2; and for hosiery workers, 176 and 79·4. As an example of silicosis one may cite cutlers, scissor makers, 466 and 104·3. There is no evidence then that boot and shoe workers suffer more from old-age phthisis; compared with cutlers at age 45–55 the respective rates are 44·2 and 135·7; at age 55–65 they are 21·5 and 64·2.

Turning now to the question of dust in boot and shoe factories, we have found in floor dust, after separating fine dust from pieces of leather, &c., by means of a sieve, from 9 to 30 per cent. of silica. In the almost pure leather dust from the finishing room there was only 0·17 per cent. silica. The dust taken for comparison from the stone corridor of this Institute yielded 45 per cent. silica. These figures relate to silica both combined and free. As the floor dust gives us no indication of the dust that might be in the air breathed by the workers, we asked you to send us dust from the beams of the factory and from the blades of the exhaust fans. We now give you typical examples of the analysis of such dusts:—

In a *boot and shoe factory*, dust from the blades of exhaust fans in the finishing room yielded:—

62 per cent. organic matter, with 2·5 per cent. nitrogen:
10·4 per cent. silica, of which approximately 3 per cent. was free silica.

The dust from the beams in this finishing room gave:—

58	per cent.	organic matter.
18·6	,,	total silica.
4·2	,,	free silica.

In the *hosiery factory*, dust from the winding-room beams yielded:—

51	per cent.	organic matter.
20·5	,,	total silica.
8	,,	free silica.

The dust from the exhaust fan in the main factory producing room gave:—

71	per cent.	organic matter.
8·2	,,	total silica.
4	,,	free silica.

The dust from the beams of this main factory gave:—

60	per cent.	organic matter.
16·5	,,	total silica.
6·1	,,	free silica.

In comparison with the above the dust from the benches in our laboratory at Hampstead yielded:—

53	per cent.	organic matter.
18·6	,,	total silica.
8	,,	free silica.

Sir J. Crichton-Browne, in the *Times*, Nov. 3rd, 1920, gave the analysis of domestic dust, taken from the top of a wardrobe in a London room; this contained:—

52·6	per cent.	organic matter, and
21·0	,,	total silica.

Analyses of dust collected from the air of eight printing works are given in a paper by C. B. Roos, published in the *Journal of Industrial Hygiene*, Vol. III., January, 1922. The dust was taken from dust-extractors in four cases, and varied from 8½ to 13½ per cent.; the free silica varied from 1·3 to 6·3 per cent. The conclusions reached by Roos were: (1) That printing cannot be described as a dusty trade—the average quantity of dust in the air was no higher, and in some cases considerably less than that in occupied rooms; (2) the dust in the air contains very little silica, and that in the compositors' rooms, machine-rooms, and other dust-producing sources, contains less silica than dust collected from a living room.

The conclusion to be drawn from all the above is that silica has no influence on the high phthisis-rate found in boot and shoe and printing occupations. While the amount of phthisis is less in the hosiery than in the boot and shoe trade, there is no less silica in the dust of the former than in that of the latter. All the evidence goes to show that phthisis is produced by the inhalation of silica dust only when the dust contains a very high percentage of free silica dust, and is inhaled for long periods of time. The air which is inhaled has to be grossly contaminated with the dust. The inhalation of organic material, such as coal dust, seems to excite the lung to keep itself clean. In the trades we are considering the percentage of free silica is very small; the air which is inhaled is not grossly contaminated with dust; and there

is a large amount of organic material present in the dust which probably stimulates the lung to keep itself clean.

Yours very truly,
LEONARD HILL.

I wish to say that it is a great help and stimulus to one who has not the means of making accurate analyses at hand, to find the National Institute for Medical Research at Hampstead so ready to help, and I am extremely grateful to Dr. Hill for taking so much interest and care in the matter. As the subject is receiving so much attention at the present time, we think the publication of the report is justifiable.

I am, Sir, yours faithfully,
REGINALD PRATT, M.D. Lond.

Leicester, March 15th, 1922.

SKIM-MILK TREATMENT OF DIABETES.

To the Editor of THE LANCET.

SIR,—The conclusion was drawn at a recent discussion on Diabetes at the Medical Society of London, that we are as far off as ever from knowing how to cure the disease. This recalls to my mind the skim-milk treatment, under which cures were at least claimed, devised[1] by Dr. A. Scott Donkin, who died in 1883. His treatment was simple—a diet of 6–8 pints of skim milk a day; no other food; no medicine. As to the effects of this treatment, two cases may be cited:—

1. A farmer, aged 37 years. Symptoms of three months' duration. Treated by restricted diet for four months before seeing Donkin, who found he was still passing 4–5 pints of urine a day with 25 gr. of sugar to the ounce. On the sixteenth day of a skim-milk diet (7 pints daily) the sugar had disappeared. He continued to improve and was gradually allowed animal food and green vegetables. Fourteen months from the commencement of the treatment he was eating ordinary bread and had no glycosuria.

2. A girl, aged 10 years, after three months on a restricted meat diet, under which the amount of urine and the sugar it contained diminished, was placed under Dr. Donkin's care, who found an excessive amount of urine of sp. gr. 1040, and containing sugar. She was put on a diet of skim milk, and on the thirteenth day the urine was free from sugar, the symptoms had disappeared. Seven months later her father reported her remarkably well and to have gained 12 lb. since the commencement of treatment. There was no sugar in the urine and she was eating wheaten bread.

Notwithstanding the publication of these and other successful cases, the treatment did not find favour, it being thought unreasonable to feed a case of diabetes with a fluid containing the large amount of sugar that milk does; and in 1884 Dr. Philpot, in his book on Diabetes, stated that the treatment had been thoroughly tried. One of these trials[2] is on record. But cases favourable to the treatment were still brought forward, the most striking being that of Dr. Headlam Greenhow who treated a coal-porter, aged 56 years, at the Middlesex Hospital. On the twenty-fourth day of treatment the urine was free from sugar; readmitted two and a half years later on account of another ailment, he was taking ordinary food, and there was no sugar in the urine.

It is now said that the treatment owed its success to being a form of underfeeding, and such it undoubtedly was, for the 6 pints of skim milk with which Donkin usually commenced treatment would only yield 1330 calories. But in two respects Donkin's treatment ran counter to present practice: he ordered no days of abstinence, nor did he determine the carbohydrate tolerance and keep just below it. He gave a uniform 150 g. of lactose a day. Nevertheless he obtained good results, for in eight of the 13 cases of which he gives details the sugar completely disappeared, on an average on the twentieth day. In the other five it was diminished. Donkin's own view seems to have been that the lactose in milk acted differently from other sugars.

Donkin did not stand quite alone in the use he made of milk. The treatment of diabetes by dieting was founded by Dr. Rollo, an army surgeon, in 1796. His principle was to exclude sugar and matters possessing saccharine properties by giving a diet consisting principally of animal food. For his first patient, a Captain Meredith, who was seriously ill, he drew up a diet-table including 1½ pints of milk at breakfast and the same at supper. Seven months later Meredith was serving with his regiment. Again, Dr. Richardson, in his book on Diabetes, says:—

"Milk I find can be taken for the most part without harm, and when there is a great love for it, which is often the case, I always allow it. Animal sugar is much more easily digested than vegetable; when it produces indigestion, as it sometimes does, a little lime-water added to it will often cause it to be borne well."

I am, Sir, yours faithfully,
Putney, S.W., March 30th, 1922. WALTER EDMUNDS.

[1] THE LANCET, 1869, ii., 538; and 1875, ii., 879.
[2] THE LANCET, 1873, i.

PREVENTIVE MEDICINE IN THE TROPICS.

To the Editor of THE LANCET.

SIR,—In your leading article of March 25th (p. 593), in reference to the Indian Science Congress Handbook, by Captain Clive Newcomb, I.M.S., it is stated: "Major J. Cunningham, I.M.S., Director of the King Institute, describes the institution, which was opened in 1903 as a lymph depôt for the supply of the Presidency alone, but which is now one of the three large provincial laboratories in India." This implies that having been built solely as a lymph depôt in 1903, the institute was developed in subsequent years, and now ranks as a belated instance of the Madras Presidency following the better example of other parts of India.

Since the "seventies," when the late Surgeon-General Cornish, C.I.E. (then Sanitary Commissioner with the Government of Madras), in a vigorous contest with the Government of India, laid bare the crude ideas advocated by Sir Richard Temple, of sanitary administration in famines, the term "benighted Presidency," then facetiously applied to Madras by its northern neighbours, has become obsolete; there has succeeded a healthy rivalry as to grade of medical and sanitary advance between the several administrative areas of India. This cannot fail to be of advantage; but it is desirable that the local governments concerned—their "sanitary consciences" being decidedly unequally developed—be credited with their respective efforts, and, to this end, that the milestones be correctly marked.

Major Cunningham has possibly been misled as to dates by the fact that whilst for the vaccine section funds were derived from local and municipal sources, the bacteriological section and its adjuncts (representing the provincial laboratories) were erected at the cost of provincial funds. Nevertheless, the whole of the buildings were planned and built simultaneously, and *as a combination* were formally declared by the Madras Government an Institute of Preventive Medicine—designated with the name of one of its sanitary officers (G. O. 1379L, dated 2/11/1903). To the Madras Government of that year, under the enlightened leadership and personal interest in public health matters of Lord Ampthill (then Governor of Madras), is therefore due the credit of erecting the first provincial laboratories in India. By December, 1903, that Government sanctioned the further addition to the then existing vaccine, bacteriological, and biochemical arrangements of a self-contained serum section—intended "more especially for employment for research purposes in the excogitation of new methods."

It would permit of another milestone being incorrectly marked were I to allow, as is generally assumed, that the Calcutta Tropical School of Medicine, which owes so much to the initiative of Sir Leonard Rogers, is the first institution in India to offer facilities for research workers. This is not the case, except in regard to the indirect method of aid by post-graduate education—any tendency to which the Madras scheme purposely avoided. The original plans for the bacteriological section of the institute, as sanctioned by the Madras Government, show the liberal allowance of

over 2600 sq. feet, on the ground floor of one wing of the main building, assigned for a laboratory and accessory rooms for "advanced students"—a term which was meant to cover all classes of approved research workers. Rulings as to the use of the "investigation laboratory" were communicated by me to all medical officers and local bodies in a circular letter (July 11th, 1904, No. 2592–S.). Commissioned officers of the I.M.S. and the R.A.M.C., private practitioners holding British qualifications or degrees of an Indian University, and students who had completed a course in bacteriology, if recommended by the Principal Medical College, were stated to be eligible for use of this part of the institute. The complete privacy of the Director (then known as the Superintendent) was provided for, whilst the hope was expressed that the "independent workers" would have "the advantage of feeling that, notwithstanding they are within a public institute, they are possessed of as complete freedom of action as to hours of use of the laboratory and of methods they employ, as if they were within a private laboratory of their own." "All usual apparatus" was placed at disposal free of charge, and they were informed that "so long as the work and the experiments conducted in no way endanger the freedom from contamination of the laboratory, the building or premises, or contravene public sentiment, or Government rulings [they] will find themselves at complete freedom to conduct any experiments or any investigation they choose." "Where help is required, all reasonable aid compatible with the general conduct of work in the institute will be afforded in watching or conducting necessary parts of experiments, night and day, by the laboratory assistants and servants, both during the presence and absence of the investigators."

I have thought it desirable to enter into details thus far, as much discussion has recently appeared in medical literature as to the necessity for laboratories being built in the tropics before research is undertaken. To my knowledge, the facilities offered were utilised by outsiders up to 1905, when I left Madras for service in Burma; but other rulings may now be in force. It seems to me, however, unlikely that a Government which was willing in 1903 to go to the expense of providing liberally for research, would now fail to welcome applications for laboratory facilities from recognised experts in this country who desire to solve public health problems as found in the tropics.

I am, Sir, yours faithfully,

W. G. KING,
Hendon, March 30th, 1922. Colonel, I.M.S. (ret.)

PROSTATECTOMY IN EXTREME OLD AGE.

To the Editor of THE LANCET.

SIR,—Mr. J. B. Macalpine's failure to find any record of prostatectomy performed on nonogenarians (THE LANCET, April 1st, p. 634) prompts me to mention three cases that came under my personal observation.

The first was under the care of Mr. Swinford Edwards at St. Peter's Hospital when I was house surgeon there. The patient was aged 90 years and 3 months. He had been on catheter life for 17 years, and during this time underwent six litholapaxies. No attempt had been made to remove the prostate as he had always taken a general anæsthetic very badly. I persuaded him to have a prostatectomy under spinal anæsthesia. The operation was most successful, and a gland the size of a billiard ball, and 22 calculi were removed. This patient died in his 101st year from the result of an accident, in which two ribs were broken.

The second case was under Mr. Pardoe, who kindly asked me to assist him at the operation. This patient was 94. Prostatectomy was performed under spinal anæsthesia, and the patient lived for nine months after the operation. Both these cases are mentioned by Mr. H. M. Page in a paper entitled Spinal Anæsthesia in 43 Suprapubic Prostatectomies.[1]

[1] THE LANCET, 1915, i., 1015.

The third case was under my own care at St. Peter's Hospital. His age was 92 years. A suprapubic cystotomy had been performed at another hospital, but no attempt had been made to fit him with a suprapubic drainage apparatus. When I saw him he had a small fistula, surrounded by dense scar tissue, through which all the urine came. It was impossible to dilate it sufficiently to admit the tube of a drainage apparatus, and as he was in a miserable condition, I decided to resect the sinus and remove the prostate. The operation was performed under a general anæsthetic, but the patient died of uræmia four days later. I have since regretted that I did not make use of a spinal anæsthesia in this case, as the resection of the scar tissue considerably prolonged the operation.

I agree with Sir John Thomson Walker that "old age does not in itself contra-indicate prostatectomy," as I have not had a single death amongst all my octogenarian patients. Without looking up the hospital records I cannot give the exact number, but at the present moment I can recall 12 cases, two of which were over 87 at the time of the operation.

I am, Sir, yours faithfully,

Harley-street, W., April 4th, 1922. J. SWIFT JOLY.

THE EDUCATION OF THE DEAF.

To the Editor of THE LANCET.

SIR,—With reference to mental deficiency amongst deaf children, I was glad to see that the Editor of THE LANCET took up the point in his recent address to the National College of Teachers of the Deaf. I have been doing special work on the subject for some time past, and I am convinced from personal investigations amongst the children of the large deaf schools in Manchester (and you must understand that in such a school is included a department which is especially for backward deaf children) there is not really any larger proportion of mentally defective children amongst the deaf than there is amongst the ordinary population. I make one reservation, which is a minor one as far as the incidence of the mentally defective is concerned, that co-sanguinity of parents tends to produce deafness, and it may tend to produce mental deficiency. But it is not a big factor.

There are, of course, a very large number of backward deaf children, and these are backward in so far as education is concerned and are backward because they have not had teaching and training in early life. And this brings us to the very important point that deaf children should be brought to schools, special schools, at an early age, so that they can learn to speak and are not forced to adopt the sign method of communication. We find that at the deaf schools at Manchester the earlier we can get the children the better, because their minds are set working at an earlier age. From the mental development point of view the Infant Department has been one of the most successful departments. I have now watched the children at the schools over a large number of years, and quite young children—i.e., from 3 years upwards—can be taught with great advantage to themselves. Even younger infants could be usefully taught if they came in sufficient numbers to justify the provision of a department and staff for teaching them. I have had deaf children sent to me as being mentally defective: children who, by strangeness of manner and curious habits contracted through neglect at home, certainly appeared to be mentally defective as well as deaf, but after testing they have turned out to be not mentally defective but merely backward and rendered queer in their behaviour by isolation through deafness.

In June of 1920 I brought a number of the deaf children from the schools down to the provincial meeting of the Royal Society of Medicine, as a demonstration of what methods of lip-reading can do amongst these children, and chose among others small children to illustrate the point which I want to emphasise so much, that children should be brought at the very earliest age possible under efficient training and skilled teaching. They should be brought at an

early age, especially before they have had time to develop habits and mannerisms which take a great deal of trouble to eradicate after the child has become rather older.

The suggestion of the Editor of THE LANCET that classes should be formed for the instruction of medical men with regard to deafness in children is a good one. It has been acted upon in Manchester to a certain extent. The late Sir James Jones provided a fund under which an annual course of lectures should be delivered on the subject of deafness in children to medical practitioners. The special importance of instruction at an early age is thus being spread. A further method of instruction which is systematic in Manchester is that those members of the Public Health Class of the Manchester University—i.e., graduates—who are attending a course of school hygiene—have instruction in the question of deafness in children and its relation to mental deficiency at the Children's Hospital. But this is only a small number, and from my work at the children's hospitals and elsewhere I know how great a need there is for the better instruction of medical men in the true facts of the case. This letter is perhaps disconnected, but I think it gives the essential points, and I shall be very pleased to provide any further information in my power.

There is one final point, and that is that in the Board of Education Circular No. 1245, recently issued regarding economy in instruction of abnormal children, the deaf are classified with defective and epileptic children. I suppose that it is because they are all abnormal children, but it does seem to me a pity to put them into the same category and perpetuate the idea that they are all of the same class.

I am, Sir, yours faithfully,

Manchester, April 6th, 1922. C. PAGET LAPAGE.

PERNICIOUS VOMITING OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—The difference in view between Dr. A. F. Hurst and Mr. T. W. Eden on the subject of pernicious vomiting during pregnancy seems to me largely one of the misunderstanding of terms. Let the term "pernicious vomiting" be retained for those cases in which vomiting at first, at any rate, is the only symptom, beginning soon after the patient knows that she is pregnant—that is, after the first period missed, and continuing with varying, but usually increasing, severity till vomiting and starvation may produce signs of acidosis and a rise in the ammonia coefficient. On the other hand, let the term "toxæmic vomiting" be restricted to those cases in which vomiting arises later in the pregnancy, mid-term or after, and is but one amongst other toxæmic manifestations, such as albuminuria and other disorders of the renal and hepatic functions, œdema, headache, and disturbances of vision.

If this distinction is made clear there is less difference between Dr. Hurst and Mr. Eden than would appear. Where Dr. Hurst leaves himself open to criticism is in saying "that the division into the nervous and toxæmic classes is fallacious. All cases are nervous, but the word hysterical should be substituted for nervous." Though very rare, vomiting developing acutely or markedly aggravated late in pregnancy is occasionally the prominent and striking symptom of toxæmia, as it may be in uræmia, and the occurrence of such cases has led to confusion and to difficulty in differentiation. With this general definition of terms, Dr. Hurst's statement of my views and experience, as given by him, is correct.

The patient who vomits and does nothing else but vomit is hysterical. When brought into hospital she ceases to vomit almost at once. At home a cure is almost hopeless, for there is always someone running about, like the stewardess on a cross-Channel steamer, with a basin for her to use, whereas in hospital the principles mentioned by Dr. Carlton Oldfield prove invariably successful. For more than ten years induction of abortion has not been done in St. Thomas's Hospital for any case of pernicious vomiting, but the induction of premature labour, or more rarely of abortion, is performed occasionally on toxæmic cases in which the vomiting may have been a symptom, though very rarely a prominent one, not because of the vomiting but because biochemical investigation of the renal and hepatic functions and the presence of clinical signs have shown that there is immediate risk or danger of permanent damage to the mother from the pregnancy continuing. The tests applied were described and discussed at the last meeting of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine by Dr. O. de Wesselow, who is in charge of the laboratory of Pathological Chemistry at St. Thomas's Hospital, and his paper appears in full in this quarter's number of the *Journal of Obstetrics and Gynæcology of the British Empire*, and there is therefore no need to explain them fully here, though it may be stated that the value of the estimation of diastase in the urine, referred to by Dr. Arthur Sladden, is fully considered.

I had not thought of describing the treatment as psychotherapy, and merely ascribed it to the effect of the atmosphere and the routine of the hospital ward—indeed, I commonly tell the patient that it is the climate that cures her—but I had recognised that the absence of the suggestion to vomit, and the strong suggestion to cease resulting from no fuss being made and the presence of other patients more ill than herself, seem to act at once without the help of medicines or operative interference.

I am, Sir, yours faithfully.

JOHN S. FAIRBAIRN.

Wimpole-street, W., April 10th, 1922.

THE HYSTERICAL NATURE OF SO-CALLED "PERNICIOUS" VOMITING OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—The object of my paper on so-called "pernicious" vomiting of pregnancy in your issue of March 18th was to show that this condition is always hysterical in origin and therefore curable. The term was taken to include only those cases of vomiting which follow on the physiological vomiting of the first few weeks of pregnancy, cases of obviously toxic vomiting which develop later in association with such conditions as eclampsia and acute yellow atrophy of the liver being excluded. I can assure Mr. T. W. Eden that whatever may appear in the "well-known text-book of the Ten Teachers," Mr. J. S. Fairbairn does agree with me about this, and among other distinguished obstetricians who also do so I may mention the names of Dr. Carlton Oldfield and Mr. R. H. Paramore.

Mr. Eden gives us no hint in his letter, published on April 8th, as to how he would diagnose the cases he still regards as toxæmic from the nervous ones, seeing that he does not believe in the fallacious chemical test suggested by Whitridge Williams. I have, however, consulted the fourth (1915) edition of his book and I find that the patient I described in detail in my paper had almost all the clinical symptoms, such as a persistently rapid pulse, marked loss of flesh, and furring of the tongue, which he mentions, as well as a very high ammonia coefficient of the urine. But instead of inducing abortion, the results of which, according to Mr. Eden, are "extremely unfavourable" in these cases, or waiting for the conclusive evidence which, according to him, the post-mortem would have given us as to the toxæmic nature of the case, we preferred to cure the patient by psychotherapy.

Mr. Eden cannot justly complain that I have misrepresented his teaching about the importance of the ammonia coefficient of the urine in the diagnosis of "pernicious" vomiting of pregnancy, as in the description of "hysterical" vomiting on page 127 in his book he says, "the urine, although diminished in quantity from vomiting or from diminished intake of

fluid, remains otherwise healthy. This point is of great importance in diagnosis." On the other hand, the second reason he gives for regarding "these cases as toxæmic" is that "the ammonia coefficient is increased."

Under the circumstances I do not think I need apologise as a physician for having trespassed in Mr. Eden's obstetrical preserves.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Berks,
April 10th, 1922.

A TONSIL AND ADENOID INQUIRY.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Sidney Barwise's suggested inquiry, in your issue of April 1st, I should like to suggest two additional headings:—

(1) Did child have a "dummy" (comforter); if so, how long?

(2) Was child bottle-fed; if so, how long?

During 12 years' experience in Kent, before the war, I never saw a child who had used a dummy or a feeding bottle, or both, regularly for some months, who did not get enlarged tonsils and adenoids sooner or later; this occurred equally in all classes of the community. Breast-fed infants do occasionally have them, but to nothing like the same extent.—I am, Sir, yours faithfully,

G. T. WILLAN, M.R.C.S., L.R.C.P.

Carlisle, April 7th, 1922.

AFTER-RESULTS OF COLECTOMY.

To the Editor of THE LANCET.

SIR,—In taking part in the discussion which followed the reading of Sir Berkeley Moynihan's paper on this subject, I made certain statements which are clearly open to misinterpretation. In criticising the inadequate statement of results as "good," "fair," or "bad," the last person I had in mind was Sir Berkeley Moynihan himself, for in his communication he had given all the data which the most captious of critics could demand. I need only add that I am indebted to Sir Berkeley Moynihan for giving me most of the opportunities I have had of investigating the pathology of intestinal stasis and that I have the utmost admiration for his work. I am, Sir, yours faithfully,

ARTHUR KEITH.

Royal College of Surgeons of England, London, W.C.,
April 8th, 1922.

*** The phraseology of our report conveyed, quite without intention, the impression which Sir Arthur Keith corrects.—ED. L.

BRITISH DENTAL ASSOCIATION: EAST LANCASHIRE AND EAST CHESHIRE BRANCH.—The annual general meeting of this branch was held at Manchester on April 8th. Mr. W. Simms, the retiring President, said that perhaps the past year had been the most critical and important in the history of British dentistry. The Dental Act of 1921, notwithstanding its acceptance on the Dental Register of a number of men who had not received the orthodox collegiate training, might be accepted as a great dental charter. One important result of the Act was that it secured the control of dental affairs by the members of the dental profession. Mr. G. G. Campion was elected as the new President of the branch.

THE RETIREMENT OF DR JAMES NIVEN.—At the conclusion of its meeting on April 5th the Manchester Town Council took formal leave of its medical officer of health, Dr. James Niven, who has held the office for 28 years. Dr. Niven's work was eulogised, and he was presented with an illuminated address. Dr. Niven said that in 1911 he had tried to estimate the loss to the city caused by disease and death in terms of material wealth, and came to the conclusion that it amounted to an annual sum of £1,533,700. Since then there has been a great reduction in the death-rate and the incidence of disease, and that saving must now be equal to an annual income of £1,200,000. Dr. Niven will be entertained to dinner on April 26th at the Town Hall by past and present members of the Manchester Public Health Committee.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, APRIL 4TH.

EXPENDITURE ON SOCIAL SERVICES.

ON the motion that the Speaker leave the chair in order that the Civil Services and Revenue Departments' Estimates for 1922–23 might be considered in Committee,

Sir J. D. REES called attention to the increase of expenditure on social services and moved:—

"That, inasmuch as expenditure upon public assistance has, so far as can be ascertained from Parliamentary publications, risen from £25,000,000 in 1890–91 to £332,000,000 in 1920–21, and will probably be not less than £400,000,000 in 1921–22, while 30,000,000, exclusive of unemployed, out of a population of 48,000,000, have actually been in receipt of such public assistance in 1919–20, it is necessary, in order to safeguard the threatened financial stability of the United Kingdom, to appoint a Royal Commission to inquire into, or a Board to take over the rationing of, all such expenditure, in view to its proper coördination, and reduction within such limits as the taxpayers and ratepayers can afford."

He said that there were two reasons why the finances of the country at the present time were in an exceedingly unfortunate position. One was the war, which was a waning reason, and the other was the policy of expenditure on the Civil Services. The latter was a waxing and constantly increasing item and it was to that item which they must in future look as the chief difficulty to be met in bringing the expenditure of the country within reasonable limits. This system, which was called social reform by those who liked it, Socialism by those who disliked it, and Bolshevism or Communism by those who detested it, was practically in its essential features one and the same system. In a word it was the substitution of public assistance for individual effort. The question was whether it was possible or not to maintain this expenditure. There were not wanting signs that the stream out of which those social services were extended was running dry. He understood that the chief inquisitor who squeezed the last drop of blood out of the taxpayer was now confronted with an enormous number of people who had no blood left. Of course, the increase of social services was no doubt exceedingly popular. The social services of the country when they took away a sum of about £30,000,000 for contributions under the Insurance Acts worked out at something like £100,000,000. Under National Insurance the Ministry of Health in 1920 cost about £25 for the administration of every £100. It was formerly done by clubs and club doctors. They should warn off that exceedingly expensive individual the health specialist who discovered that victorious England, which in its stride destroyed militarist Prussia, was a C3 nation. The gentlemen who discovered that mare's nest at least should have no share in putting burdens upon the back of the ratepayer and the taxpayer.

Major BARNES seconded. While he did not vouch for Sir J. D. Rees's figures, he said there was no doubt that there had been an enormous increase on social services. At the same time they ought to realise that they were receiving very large sums from the same class of people who were receiving the benefit of that expenditure. He thought that a Royal Commission would probably make very valuable suggestions indeed in regard to the methods of presenting national accounts and would lead to classification of those accounts in such a way that really the large classes into which they fell would be clearly separated in the public mind.

Mr. W. GRAHAM said according to reliable statistics from eminent medical men and others there had been a grave deterioration in the physique of millions of the British people. The Labour party thought that the one problem which was behind all this so-called social legislation was what the nation was to do to secure a healthy and above all an efficient people. They had suggested that there should be provision for those in ill-health under the Ministry of Health or through the local authorities, and that it should be accompanied by drastic schemes in housing and other reforms until disease itself was eliminated.

Mr. HILTON YOUNG (Financial Secretary to the Treasury) said it was, of course, recognised that expenditure on these services at the present time had grown enormously in comparison with the past. He would not say for a moment that it did not suggest the most serious reflection as to whether the expenditure might have grown too high considering the financial state of the nation at present. At the same time let not the House be terrified by the excessive differentiation between the two figures quoted by Sir J. D. Rees. To compare the expenditure in 1891 with the present time they must allow for the increase in wages and prices and the increase in the population. Was it suggested that they should wipe out the whole scheme of health insurance? No such

suggestion had been made. Other increases mostly related to hospitals, medical treatment, maternity benefits, housing, and lunacy. They were not accustomed to hear in that House, or from Sir J. D. Rees, arguments at any rate supported by votes against any of those proposals. He could not believe that there was any subject-matter whatever for inquiry in the debate which was suitable for a Royal Commission. The true direction in which to look for economy was by work on the estimates—work which was already reflected in the estimates now before the House.

Mr. MACQUISTEN said that the Financial Secretary to the Treasury had suggested that nobody would think of repealing the National Health Insurance Act. If the Government wanted to be popular it could do nothing more likely to meet the views of the ordinary man in the street who was the taxpayer. It was conceived more or less as a "stunt" and it had done very little good except to enable the sixpenny doctor to keep an American motor-car. His West End confrères had used the National Health Insurance contributions as a sort of beginning for a more aristocratic practice with, he might add, very perfunctory medical attention. They could not work a profession in that way. It was merely a tax placed upon unfortunate people for the support of a profession. No doubt many doctors—in fact, he believed the majority—had still got about them traces of the old professional standard and he believed it would last for many years. But there was no doubt that the general effect had been to provide men who could not get practices in the ordinary competition in the medical profession with a very satisfactory beginning. No sane person who was really ill and could afford it would ever dream of going to these panel doctors. Nurses and seamen were compelled to pay contributions and yet got no benefit at all. It was a monstrous imposition.

The motion that the House go into Committee was agreed to.

WEDNESDAY, APRIL 5TH.

Medical Aid for Egyptian Deportees.

Mr. SWAN asked the Under Secretary of State for Foreign Affairs whether he was aware that the island of Mahé, on which the deportees from Egypt had been placed, had a rainy climate and a temperature of 84° in the shade in winter; that there was only one qualified medical practitioner and no specialists upon it; that there were no dentists and no drugs upon the island; that Saad Zaghlul Pasha was suffering from diabetes and bronchitis, Barakat Bey also from diabetes, and William Makram Ebeid from malaria contracted since his arrest; whether the deportees had addressed a complaint to the Foreign Office in regard to the place of their detention: and what reply had been given to this complaint.—Mr. CECIL HARMSWORTH replied: I am informed that the shade temperature in the Seychelle Islands ranges from about 68° to 84° F., but is lower in the hills, and the climate is not considered unhealthy. There are three Government medical officers in the colony, the chief of whom is an experienced officer of high standing. Facilities exist for dental treatment, and there is no reason to suppose that the supply of drugs is insufficient for local needs. I am aware that Zaghlul Pasha has long suffered from the complaint mentioned by the hon. Member, but I have no information that he has contracted bronchitis, or that the health of the other deportees is impaired. No complaint as to their place of detention has been received from the deportees.

Physical Standards in the Navy.

Sir THOMAS BRAMSDON asked the Parliamentary Secretary to the Admiralty what were the orders which authorised a lower physical standard, other than vision, for the entry of men into the writer branch of the Royal Navy; and whether the Admiralty would effect any improvements in the ventilation and lighting of the offices ashore and afloat in view of the high percentage of consumption cases in the Royal naval writer branch, observing that, although the duties of naval writers demanded a sedentary indoor type of life, this was by no means peculiar to the writer branch, and that the high percentage of invalids could not be altogether attributable to a reduced physical standard during the war period, because the same reduced standard was also applied to many other branches.—Mr. AMERY replied: As regards the first part of the question, the regulations authorising a lower physical standard for writers, in other respects than vision, were introduced in 1911. As regards the other parts of the question, I have nothing to add to my reply of March 20th, except that the desirability of raising the physical standard of writers on entry is being considered.

Admission to the Dentists' Register.

Colonel WEDGWOOD asked the Minister of Health whether, in the case of persons applying for admission to the dentists' register who were required to produce proof of having practised dentistry, as their main means of livelihood, during the period spent as assistants to registered or unregistered dentists, a sworn affidavit by the person employing them to this effect was accepted as sufficient proof to entitle them to be registered, if in other respects they complied with the requirements of the Dentists Act.—Sir A. MOND replied: I understand that it is the custom of the Dental Board, in the case of applicants for registration, who have been employed by another unregistered practitioner, to accept a sworn declaration by the employer as corroborative of the statements made by the applicants himself.

Lunacy Reform.

Captain LOSEBY asked the Minister of Health if he intended to introduce a Bill dealing with lunacy reform at an early date.—Sir A. MOND replied: This question is under consideration, but I am not yet in a position to say whether it will be practicable to introduce legislation.

Overcrowded Slum Areas.

Mr. L'ESTRANGE MALONE asked the Minister of Health whether he was aware that the Land Commission prior to 1914 reported that one-tenth of the population was living in habitations unfit for human beings, and that a further one-tenth was living in overcrowded slum dwellings, and that this state of affairs was made considerably worse by the lack of building operations during the war; and what did his department now estimate to be the percentage of the population of England, Scotland, and Wales who were living in habitations unfit for human beings.—Sir A. MOND replied: The figure referred to in the first part of the question was, of course, only an estimate by an unofficial committee. The surveys made by local authorities in 1919 indicated that the population in unfit houses and houses in unhealthy areas was about 3·7 per cent. of the total. Pending receipt of comparable figures as a result of the census of 1921, I can make no statement as to the present position.

The Schick Treatment.

Mr. GILBERT asked the Minister of Health whether any instructions had been issued by his department to any medical officers under their control in Poor-law or other institutions to use the Schick treatment for the prevention of diphtheria; whether his department provided the serum necessary or whether it had to be purchased from wholesale houses; whether it was a special proprietary article which could only be obtained from certain firms, and whether it was manufactured in this country or whether it had to be imported from Germany or America.—Sir A. MOND replied: The answer to the first part of the question is in the negative. The serum in question is manufactured in this country by certain firms which have the necessary laboratory equipment.

Mr. ROBERT YOUNG asked the Minister of Health whether any, and if so what, antiseptic was added to the diphtheria toxin used in the Schick test or to the toxin-antitoxin used for immunising purposes.—Sir A. MOND replied: I am advised that the diphtheria toxin solution used in the Schick test contains 0·001 per cent. phenol, and the toxin-antitoxin mixture 0·5 per cent. phenol together with a trace of tricresol.

National Health Insurance Funds.

Mr. RHYS DAVIES asked the Minister of Health (1) whether he was aware that, of the securities held for national health insurance funds on Dec. 31st, 1921, there was no less than £33,000,000 invested in gilt-edged securities, the majority of which bore interest at the rate of 5 per cent., which would be redeemed by the Government in less than six years' time; and what steps had been taken by those responsible for the investment of funds on behalf of approved societies to ensure the retention of a 5 per cent. yield after the year 1928. (2) Whether, having regard to the fact that the amounts invested by the Ministry were in reality the funds of approved societies, he would consider the advisability of appointing a joint committee consisting of representatives of the Ministry of Health and of approved societies, with a view to ensuring that these investments were made to the best advantage of the societies and of avoiding the practice of having such a large sum as £33,000,000 redeemed by the Government at one time only to be reinvested at a lower rate of interest, and with a view to avoiding delays in notifying approved societies of sums due to them by way of interest and otherwise.—Mr. HILTON YOUNG (Financial Secretary to the Treasury) replied: I may observe that of the £33,000,000 in question £27,400,000 is invested in bonds which have rights of conversion into 5 per cent. War Stock, at the rate of £105 5*s.* 3*d.* for every £100 converted; and the National Debt Commissioners neglect no opportunity of effecting exchanges of such investments, where deemed expedient. At the present time about half of the National Health Insurance Funds held by the National Debt Commissioners are invested in long-dated securities. In making investments the Commissioners must have regard and give due weight to different considerations—e.g., the particular requirements of the capital and income accounts respectively from time to time, the necessity for keeping a due proportion of the funds in a liquid form, easily realisable at any time, and the necessity of avoiding capital loss on such realisation.

The large amount of National War Bonds now held and maturing in the next eight years were purchased with special reference to the position of the capital account, as the premium of 5 per cent. payable on the redemption of such bonds will contribute towards meeting the nominal losses incurred owing (*a*) to the fall in the market value of securities generally, and (*b*) to the conversion of a large amount of 2½ per cent. Consols held for the fund into 4½ per cent. War Loan. I see no necessity for the appointment of a joint committee for the purpose of advising the expert department in the exercise of its statutory functions.

THURSDAY, APRIL 6TH.

Milk Classification.

Mr. TREVELYAN THOMSON asked the Minister of Health whether, when considering amendments to the Milk and Dairies Act of 1915, he would give favourable consideration to the desirability of enabling local authorities to assist in securing improved supplies of milk in their area by means of classification and by having the power to revoke or suspend certificates and of registration of all milk-sellers in their area.—Sir A. MOND replied: Yes, Sir, both these proposals are receiving my careful consideration.

The Date of the Budget.

Mr. WATERSON asked the Chancellor of the Exchequer the date of the introduction of the Budget.—Sir R. HORNE replied: I hope to introduce the Budget on Monday, May 1st.

Education of Blind and Deaf Children.

Colonel WEDGWOOD asked the President of the Board of Education whether local authorities were advised by Circular 1245 of the Board of Education that, in order that the cost of educating blind or deaf children in 1922–23 might not exceed that incurred in 1921–22, contracts should not be made by them for sending such children to suitable schools: whether certain local authorities had decided not to make such contracts in respect of children above the number of those attending such schools during 1921–22; and would he explain, in view of the provisions of the Act of 1893, why the Board had issued a circular which pointed out to local authorities a method of evading that Act and encouraged them to disregard their duties under the Act.—Mr. FISHER replied: I have every hope that the provision made by Parliament for the purpose will enable me to make arrangements to avoid any reduction in the provision hitherto made for the education of blind and deaf children.

MONDAY, APRIL 10TH.

Taxation of Motor Vehicles to be Reconsidered.

Lieut.-Colonel ARTHUR MURRAY asked the Parliamentary Secretary to the Ministry of Transport whether he proposed to make recommendations that taxes on petrol should be substituted for the present taxes on motor vehicles.—Mr. A. NEAL replied: I propose to ask the Departmental Committee on the Taxation and Regulation of Road Vehicles to consider afresh the whole question of the taxation of mechanically-propelled vehicles, in the light of the experience which has now been gained of the working and incidence of the licence duties imposed by the Finance Act, 1920.

Medical Information and Pension Delays.

Mr. MURROUGH WILSON asked the Minister of Pensions whether he was aware of the serious hardship caused to dependants of deceased ex-Service men when applying for a pension by the inability of the Ministry to obtain from medical practitioners material information relative to the death of the deceased soldier, thereby causing delay amounting in some cases to eight and nine months; and whether, since the real cause of the apparent lack of coöperation on the part of the medical profession was a question of the fee payable for the work, what steps he proposed to take to insure that the applicant for a pension did not suffer in consequence of the lack of this information and that some amicable arrangement with the medical profession as a whole on the subject of supplying such information could be arrived at.—Mr. MACPHERSON replied: I am not aware that there is any general delay of the nature suggested; on the contrary doctors are, as a rule, quite willing to supply the information required by my department for the fee authorised.

SALARY OF MEDICAL OFFICER OF HEALTH OF MANCHESTER.—The question of the vacant Manchester medical officership of health was discussed on April 7th at the Town Hall by a joint conference between representatives of the Town Hall Committee, of the British Medical Association, the Society of Medical Officers, and representatives of the medical profession of Manchester. After the conference, which lasted for three hours, the chairman of the Town Hall Committee stated that during the discussion certain concrete proposals had been made which would be further considered by the Town Hall Committee and submitted in due course to the City Council, but no agreement had been arrived at and nothing had been decided.

Obituary.

SIR PATRICK MANSON, G.C.M.G., M.D., LL.D. ABERD., F.R.C.P. LOND., F.R.S.,

LATE PHYSICIAN AND MEDICAL ADVISER TO THE COLONIAL OFFICE.

WE regret to record the death of Sir Patrick Manson, the distinguished physician and parasitologist, who was the first to trace the connexion between the mosquito and the malaria parasite. The death occurred on Sunday, April 9th, at his house in London.

Sir Patrick Manson, the son of an Aberdeen landowner, was born in 1844 and educated at the University of Aberdeen, where he graduated in medicine in 1865, held various appointments, including that of medical officer to Durham County Asylum, and proceeded to the M.D. degree in the following year.

In 1866 he took the step which decided his career, when he went to Formosa to act as medical officer to a group of merchants and missionaries. He found himself in a pathological environment which was entirely new to him, for he was surrounded by diseases which for the most part were unstudied in the medical schools at home, while their ætiology was unknown to the scientific world. Becoming involved with the Japanese political service for helping China to buy ponies in a Chino-Japanese "scrap," he left Formosa for Amoy, in China, in 1871. There he acted as medical officer to the Chinese Maritime Customs. At Amoy he first distinguished filaria in blood, though independently this had been done before, and there he wrote his first scientific communications in medical reports to the China Imperial Maritime Customs. At a Chinese hospital which he organised he worked steadily to acquire some first principles in the treatment of tropical diseases, and in 1874, when he returned to England for further study, he realised the lack of facilities for acquiring any knowledge of tropical medicine in England. He had recourse to medical history, and read steadily at the British Museum till he was master of the existing literature on elephantiasis. He returned to Amoy in 1876, taking with him a newly acquired wife, and spent the next two years in working out the life-history of filaria. His results were communicated to Thomas Spencer Cobbold, the then leading helminthologist, who published them in 1879.

Extracts from a private note-book kept by Manson during this time show that in August, 1877, he attempted to inject a monkey with filaria by feeding it on bananas containing infected mosquitoes. In May, 1878, we find him looking for an organism inside the cells contained in juice expressed from leprous tubercles. These he inoculated into eggs which he placed underneath a hen, thus anticipating to some extent Koch's method of growing organisms in specialised media. In June of the same year we find a record of experiments made with blood from a case of quartan ague, and hourly records of temperature among patients, the research for the parasite of malaria having already attracted him. Later Manson deplored the fact that he happened to have been dealing with a case of quartan malaria, whereas Laveran two years later, working in a country where subtertian malaria was common, was able to perceive the characteristic crescent forms. His characteristic comment on this was, "Had I had the luck of Laveran, what a swell I would have been!" In a letter to Cobbold, dated June 20th, 1879, he says, with similar modesty: "Men like myself in general practice are but poor and very slow investigators crippled as we are with the necessity of making our daily bread," and yet it is doubtful if Manson would have achieved his great eventual success if it had not been for the range of practical knowledge and adaptability acquired as a healer of the sick.

In 1883 he returned to England and for the first time worked with an oil-immersion lens! His previous

observations had been made with a French simple lens microscope called the Nachet-fils. While at home he published a small book on filariasis, and in 1884 returned to China, where he confirmed his previous work with the better apparatus now at his disposal; it was in this year that he made his original researches into sprue, the results of which will be found in an excellent contribution to Allbutt and Rolleston's System of Medicine. The years 1885 to 1889 were spent at Hong-Kong in general practice, where he founded a medical college for the Chinese, and was its first Dean. He also inaugurated a dairy farm for the supply of fresh cow's milk to the hospitals and to the European community. We can trace in these brief notes of his activities the wide range of Manson's work as well as the definite focus of it all upon tropical hygiene, and upon the discovery and spread of knowledge which should counteract the terrible inflictions of tropical disease.

In 1890 he returned definitely to England, and with an unrivalled personal knowledge of his subject set up as a consultant in Queen Anne-street. He became physician to the Dreadnought (Seamen's Hospital Society) in 1894, and in 1897 was appointed Medical Adviser to the Colonial Office. In 1898 he delivered at St. George's Hospital a lecture on the need of the special study of tropical diseases. This came to the notice of Joseph Chamberlain, then Colonial Secretary, and the London School of Tropical Medicine emerged from this meeting, as well as great practical assistance to Manson's work.

The story of the rôle played by the mosquito in the dissemination of malaria is one of the most fascinating narratives in pathology. The prologue is supplied by Manson's work in China with regard to elephantiasis, to which reference has already been made. In the early years of his tropical experience in Formosa, and later at Amoy on the coast of China, he saw many cases and forms of this disease. During his leave in 1874 he met that great discoverer Timothy Lewis, whose researches into the causes of endemic hæmaturia and chyluria in certain districts of India resulted in the demonstration of the *Filaria sanguinis hominis*. On his next return to China Manson ascertained that these parasites were present in percentages varying from 10 to 50 among the population, but as the organism was immature and asexual he concluded that it was in process of development. This discovery had been anticipated by Bancroft in Australia, as well as by Lewis himself, and the mature form he recognised as a worm, three or four inches in length, inhabiting the lymphatic vessels. The problem was to discover the physiological and mechanical connexions between this isolated immature animal and the wriggling progeny in the blood. Manson saw that an intervening agent and one capable of piercing the skin of the human body and of absorbing the human blood, with its wriggling contents, was necessary, and the possible intervention of the mosquito occurred to him. He confirmed his theory by the examination of the blood of 1000 Chinamen. To carry on this work he trained two Chinese medical students, stimulating their enthusiasm by offering a reward. It chanced that one of these students had more leisure to work at night, when the peculiar fact emerged that he was able to bring to Manson many more positive results. The phenomenon was confirmed by Manson's personal investigations that in ordinary conditions of health filaria came into the blood about sunset, increasing in numbers towards midnight, but decreasing towards morning.

The next step was an experiment on the human subject. A Chinaman went into a frame surrounded by mosquito nets at evening, leaving the door open for half an hour. In the morning Manson found dozens of mosquitoes gorged with blood and clinging to the walls of the house. An examination of the abdominal contents of the mosquitoes showed the absorption of the filaria, and its stimulation by the digestive juices of the mosquito to certain structural changes. Its enclosing sack had been broken through and discarded, while considerable growth had taken place, accompanied with the development of mouth and alimentary canal.

The discoveries thus baldly set out took months of intensive work, and soon a clear demonstration was possible that the filaria in its modified forms leaves the stomach of the mosquito, reaches the thoracic muscles and finally the proboscis, in which form it is ready to infect the human being.

Manson immediately applied this piece of detective research to the case of malaria. The malaria parasite had been discovered by Laveran in Algiers as a minute organism living in the red blood corpuscles, and multiplying in certain time intervals according to the particular kind of parasite concerned. The method by which the parasite could pass from one human body to another had not been explained. Manson from previous experience reasoned that the parasite, like the filaria, to pass from man to man must require the intervention of some such blood-sucking animal as the mosquito. For being enclosed in the red corpuscles of the blood it would be incapable of acting by its own efforts. It had already been noticed that the malaria organism underwent certain changes, becoming flagellated when the parasite had been removed from the human body, and Manson concluded that these flagellated bodies were an early form of the extra-corporeal phase of the parasite. He communicated his views to the *British Medical Journal*, when a sum of money was promised by the British Medical Association to enable Manson to work out the theory. The Royal Society was unfortunately unable to coöperate, but just when Manson's own chance of working out his mosquito-malaria theory fell through, he met with Ronald Ross, who agreed to carry on the research in India. Everyone knows the energetic manner in which Ross took up the idea. The life-history of the malaria parasite was promptly worked out by Ross, when he traced at Manson's suggestion the connexion between the mosquito and the malaria parasite of birds into the mosquito from the mosquito stomach into the salivary glands down the proboscis and back into the bird. To the scientific world the demonstration was complete, but the public was sceptical until the Colonial Secretary, that great man Joseph Chamberlain, recognised to the full the importance of the discovery, and placed the necessary funds at Manson's disposal to carry out certain experiments. The first of these was the sending out to the most malarious part of Italy two observers, Dr. Louis Sambon and Dr. G. C. Low, who were to live among the fever-stricken population, exposing themselves all day to the ordinary environment of sun, wind, rain, and soil emanations, but who retired for the night before sunset into houses specially protected from invasion by mosquitoes. These men remained healthy when the people around them were ill and often dying of malaria. The second experiment, conducted in London, consisted of subjecting healthy subjects to the attacks of mosquitoes collected in the malarious zone in Italy. His son, the late Dr. Thurburn Manson, and Mr. Warren, the senior laboratory assistant at the London School of Tropical Medicine, were bitten by imported mosquitoes fed on malaria patients in the Roman Campagna; they suffered from malarial fever a fortnight after they were bitten, the parasites being found in their blood.

Sir Patrick Manson retired from active practice in 1913, and for a time travelled in Ceylon and South Africa noting hygienic problems. On his return he continued to take a deep interest in the conduct of the London School of Tropical Medicine and the progress of his special branches of science. He exercised great influence upon all who worked with him, for which nothing was too big or too small for him to consider; his clinical acumen was sound, so that he made few mistakes. His habit of thought may be summarised in his own words written in 1909 to his son-in-law: "Never refuse to see what you do not want to see or which might go against your own cherished hypothesis or against the views of authorities. These are just the clues to follow up, as is also and

emphatically so the thing you have never seen or heard of before. The thing you cannot get a pigeon-hole for is the finger point showing the way to discovery." His own scientific hypotheses had a knack of turning out right—for example, his forecast of the life-history of *Schistosoma hæmatobium* in the fourth edition of his manual of Tropical Diseases in 1907, also his suggestion in 1903 of the two species of schistosoma proved true by Leiper in 1915. Younger men who came under Manson's influence remarked always that in outlook and in knowledge he remained eager and enthusiastic to the end. His interest in his work never flagged. Only 14 days before his death he visited the London School of Tropical Medicine and critically examined some microscopical preparations, showing his usual perspicacity in picking out the important points in each specimen and emphasising the lessons they taught. Almost the last words he uttered expressed his hopes for the future of this school for which he anticipated a still wider field of work in coöperation with the Rockefeller scheme for the new Institute of Hygiene.

He married in 1876 Henrietta Isabella, daughter of Captain J. P. Thurburn, by whom he had two sons and three daughters, one of whom is the wife of Dr. Manson-Bahr, the editor of the last edition of Sir Patrick Manson's famous Treatise on Tropical Diseases.

FRANCIS DARBY BOYD, C.B., C.M.G., M.D. EDIN., F.R.C.P. EDIN.,

PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF EDINBURGH.

Prof. Boyd, who died on April 4th in Edinburgh, was in his fifty-sixth year. Son of Mr. John Boyd, the publisher, and educated first at Edinburgh Academy, he afterwards entered the University, graduating M.B., C.M. in 1888. Five years later he won the gold medal at the M.D. degree, having in the meantime continued his studies at Prague and Berlin. In 1891 he was elected a Member of the Royal College of Physicians of Edinburgh and in the following year to a Fellowship. During the South African War he served as physician to the Edinburgh Hospital and for his services was mentioned in despatches and received the C.M.G. in 1901. In the late war he served with distinction as consultant to the British Army in Egypt, was again mentioned in despatches, and was awarded the C.B. From the Territorial Force, in which he was a major, he retired owing to age limit, with the rank of colonel, only a few days ago.

Prof. Boyd, who was appointed to the chair of clinical medicine in the University of Edinburgh as recently as 1919, was consulting physician to the Deaconess Hospital, Edinburgh, and had been physician to the Royal Infirmary, Edinburgh, and lecturer on materia medica and therapeutics at the school of medicine of the Royal Colleges. He married in 1904 Constance, eldest daughter of Mr. Alfred J. A. Lepper, by whom he had two daughters.

UNIVERSITY OF MANCHESTER.—The total sum obtained by the bazaar held last November in aid of the funds of the University amounted to £15,940.

TOURS IN THE HAUTES PYRÉNÉES.—The Touring Club de France, in collaboration with the Camping Club of Great Britain and Ireland, the Belgian Touring Club and the Tourist Camping Club of the Netherlands, have organised a 19 days' camping excursion in the Pyrenees—namely, from Sept. 2nd to 23rd next. Starting from Paris-Orsay on Sept. 2nd, at 5.15 P.M., and arriving at 8 A.M. the following day at Cauterets, in the Department of Hautes Pyrénées, the party will be organised and provision will be made for the tour which will end at Arreau via Tarbes, Lourdes, Pau, and Bordeaux to Paris by boat, or direct from Tarbes to Paris by train. Various optional excursions and opportunities for sport are included in the itinerary. Further information can be obtained from the Office Français du Tourisme, 56, Haymarket, London, S.W., or from Dr. Meillon, President du Syndicat d'Initiative, Cauterets, Hautes Pyrénées, France.

Medical News.

UNIVERSITY OF CAMBRIDGE: DIPLOMA IN PSYCHOLOGICAL MEDICINE.—A short course of instruction for the D.P.M. examination will be held in Cambridge from July 12th to August 17th. The course will include lectures and practical work on psychology, the anatomy and physiology of the nervous system, morbid psychology, mental diseases, dreams, mental deficiency, &c. The fee for the full course is twelve guineas. Further particulars may be obtained from the Secretary, D.P.M. Committee, Psychological Laboratory, Cambridge.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Bacteriology and Pathology.—*Bernard Morris, *Agnes McLaughlin, *Henry W. L. Dale, Harold Renton, Reginald R. J. Brandt, James A. MacDonald, Ernest M. Landau, William F. Hutchinson, James E. Deale, Cecil A. V. Ovendale, Arthur Darlington, Frederick G. Brown, Martha Reid, Samuel M. Geffen, John S. Glasgow, Israel Marin, Margaret L. Cowan, Albert V. Foster, Albert E. O'Donnell, Harold Lewin, Charles T. MacCarthy, Maria E. Wagener, Richard C. L. Griffiths, Etienne R. Hafner, Hugh R. Brady, Charles Gordon, Hans J. Hugo, Philipp F. H. Wagner, Kathleen E. Hill, Herbert Kohlberg, Hyman S. Roseman, Richard R. B. Crawford, Isabella H. Speedy, Albert V. Wood, Gerard A. A. Powell, and Jack A. Levett.

Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene.—Albertus W. Eksteen, Mossy Jaffe, Nicolaas Jan Valkenburg Van Druten, Louis Harris, and Samuel W. Jamison.

Medical Jurisprudence and Hygiene; Bacteriology and Pathology.—Isobel G. Smith.

Materia Medica and Therapeutics; Bacteriology and Pathology.—Eileen Brangan.

Bacteriology and Pathology.—William T. Hogan, James J. FitzGerald, William L. Duncan, and David J. Malan.

Part II., Medicine.—*Izak George Sacks, *Charles E. Brunton, Maurice Bewley, Daniel Hugo, Olive V. Fair, George Blackall, William B. E. McCrea, Ruth Lemon, Leopold Stazunsky, Joseph Harte, Francis M. Hilliard, Ivan Marais, May E. Powell, Mauritius M. Viljoen, Thomas G. Warham, Richard Lang, Rita Dillon-Leetch, Leon O. Vercueil, Charles E. Ovendale, William B. Briggs, John E. McCormick, Eric R. Murray, Cecil de Lisle Shortt, William S. Dickson, Lionel Wigoder, Jacob Hofman, Allen E. Drotske, Julius Kruger, Seymour G. Rainsford, John B. Horan, Charles W. Parr, Donald H. Saayman, Izidore P. Myers, David L. H. Moore, Izak F. A. de Villiers, Victor Robinson, Hendrik N. Krige, and Harry C. Dundon.

Surgery.—Samuel G. Weldon, Hendrik N. Krige, Isaac Cornick, Cyril J. U. Murphy, Petrus H. S. Fouche, Margery Bouchier-Hayes, David L. H. Moore, William S. Dickson, Francis Malone-Barrett, James Devane, Francis B. D'Arcy, Robert Dormer, Cecil W. R. McCaldin, George S. Moran, Henry J. L. Murphy, Vera G. M. Meuary, Izak F. A. de Villiers, John G. Russell, Albert E. Phillips, William P. Burns, Alfred J. Beckett, and Gilbert Kirker.

Midwifery.—*Geoffrey Bewley, *Mauritius Meiring Viljoen, Matthijs P. Louw, Robert N. Perrott, Alexander Bernstein, Florine Isabel Irwin, Joseph C. Gillespie, William H. Smith, David J. Malan, Mary H. Harcourt, Ivan Marais, Isaac Cornick, William E. Callanan, James Devane, John B. Horan, Douwe Marinus Vellema, Joseph E. Deane, William E. Holmes, Michael Gallivan, Henry J. L. Murphy, Ninian McIntire Falkiner, Maurice Schwartzberg, Herbert Hall, Francis B. D'Arcy, Joseph Harte, Alfred J. Beckett, Joseph M. O'Connor, Samuel W. Russell, and David S. Spence.

DIPLOMA IN PUBLIC HEALTH.

Part I., Chemistry, Bacteriology, Physics, and Meteorology.—James A. Acheson, John C. P. Beatty, Hector C. C. Deane, Alice B. S. Smith, Margaretta T. Stevenson, Edith F. Willock, Nannette Norris, and Richard V. Dowse.

Part II., Sanitary Engineering, Practical Sanitary Report, Hygiene and Epidemiology, Vital Statistics and Public Health Law.—John C. P. Beatty, Hector C. C. Deane, William L. Young, Nannette Norris, Edward D'Arcy McCrea, Richard W. Power, Edith F. Willock, and James A. Acheson.

MASTER IN SURGERY (M.CH.).

Edward D'Arcy McCrea.

* Passed on high marks.

UNIVERSITY OF ABERDEEN: RESIGNATION OF PROF. C. NIVEN.—Prof. Charles Niven has resigned the Chair of Natural Philosophy at the University. He graduated at King's College, Aberdeen, in 1863, and was Simpson Mathematical prizeman. In the following year he won the Ferguson Scholarship, and in 1867 was Senior Wrangler at Cambridge. On leaving Cambridge he was appointed Professor of Mathematics in Queen's College, Cork, in 1880 Professor of Natural Philosophy at Aberdeen University, and in the same year was made a Fellow of the Royal Society. The more important of his numerous publications were his articles on the elasticity

of solid bodies, conduction of heat, and conduction of electric currents. Prof. Niven received the hon. degree of D.Sc. from Queen's University, Dublin, and on more than one occasion was appointed examiner for the Ferguson scholarship. He was one of a family of remarkable mathematical scholars. His elder brother, also a Simpson prizeman, became a Fellow of Trinity College, Cambridge, and an F.R.S., and later became Director of Studies at the Royal Naval College, Greenwich. A younger brother was eighth Wrangler at Cambridge, while the youngest brother was fifteenth Wrangler. Both the latter became qualified in medicine.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the College was held on Monday, April 10th, Sir Norman Moore, the President, occupying the chair. The President commenced his annual address by announcing that after four years of office he did not desire to serve for a further year. He then gave a summary of the chief events in connexion with the College during the past year and accounts of the ten Fellows of the College who had died during the year—viz., Dr. G. D. Longstaff, Sir George Savage, Dr. Albert S. F. Leyton, Dr. F. A. Bainbridge, Dr. John Wickham Legg, Dr. John Harley, Dr. John Elliott, Dr. George Charles Bright (son of the celebrated Dr. Richard Bright), Dr. Ainslie Hollis, and Sir Patrick Manson. Sir William Church proposed a vote of thanks to the President for his address and for his services to the College. Sir Norman Moore then vacated the chair, and the College proceeded to the election of a President. In the first ballot Sir Humphry Rolleston received 34 votes and Sir John Rose Bradford 17, 81 Fellows voting. In accordance with the by-laws of the College a further ballot took place, when Sir Humphry Rolleston received 58 votes, Sir John Rose Bradford 23. Sir Humphry Rolleston was installed as President by the senior Fellow present, Sir W. S. Church, and he then gave his faith to the College. Various communications were received, and Sir Humphry Rolleston was appointed the representative of the College at the celebrations in honour of the foundation of the University of Padua. After a proposal by Dr. Sidney Phillips in regard to the Finance Committee of the College, the President declared the Comitia closed.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The quarterly Council was held on April 6th, with Sir Anthony Bowlby in the chair. A report was read from the secretary respecting candidates found qualified for the Membership, and Diplomas of Membership were granted to three candidates named in the report.—The best thanks of the Council were given to Mr. Alban Doran for his valuable services in continuing to arrange and catalogue the collection of surgical instruments in the museum, and to the Government of Trinidad for presenting to the College some skeletons excavated at Palo Seco in Trinidad.—A report was received from the Library Committee regarding the completion by the librarian of the Lives of the Fellows, and a vote of thanks was given to the librarian, Mr. Victor G. Plarr, for his interesting and valuable work.—The Jacksonian Prize for 1921, for essays on the Pathology, Diagnosis, and Treatment of Tuberculous Disease of the Spinal Column with its Complications, was not awarded, and the subject adopted for the year 1923 was the Pathology and Treatment of Malignant Diseases of the Testicle.—The following members of 20 years' standing were elected to the Fellowship: Charles Brook (Lincoln), diploma dated April 19th, 1861, and William Coates, C.B., C.B.E. (Manchester), diploma dated July 25th, 1881.—The President was requested to convey the congratulations of the Council to Dr. C. H. Brooking, M.R.C.S. 1843, of Paignton, who recently attained the age of 100 years.

The following demonstrations, open to advanced students and medical practitioners, of specimens from the museum will be given in the Theatre of the College in Lincoln's Inn Fields at 5 P.M. on the following dates: April 21st, 28th, and May 5th, Prof. Sir Arthur Keith on Specimens of Hernia, Femoral and Obturator Forms, the Causation of Hernia; specimens illustrating the forms of Inguinal Hernia; Umbilical and Diaphragmatic Hernia. April 24th, May 1st and 8th, Prof. Shattock on Specimens illustrating Repair; specimens illustrating Sarcoma; and specimens illustrating Tuberculosis.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The arrangements for the short course in general medicine from May 1st to 13th, already announced, are now complete. Lectures and demonstrations will be given at the following institutions: National Hospital for Diseases of the Heart, Bethlem Royal Hospital, Royal Westminster Ophthalmic Hospital, Paddington Green Hospital for Children, Middlesex Hospital, London Lock Hospital, St. Mark's Hospital, Maida Vale Hospital for Paralysis and Epilepsy, Brompton Hospital, and St. George's Hospital. Application for copies of the syllabus and tickets admitting to the course should be made to the Secretary to the Fellowship of Medicine, 1, Wimpole-street, London, W. 1. This course will be repeated during the summer, and corresponding courses in children's diseases, tropical medicine, &c., are in course of preparation.

The series of free lectures at the Royal Society of Medicine, 1, Wimpole-street, announced last week, will begin on May 1st. The opening lecture will be delivered at 5P.M. by Sir Humphry Rolleston, on "Recent Physiology of the Liver and its Application in Practice." Other lectures in May will be as follows: May 9th, Sir Arbuthnot Lane on Fractures; May 16th, Sir Thomas Horder on "The Clinical Significance of Hæmoptysis"; and May 24th, Sir StClair Thomson on "The Surgical Anatomy of the Nose and Accessory Sinuses" (lantern demonstration). The complete list of lectures to the end of July will be forwarded on application to the Secretary to the Fellowship of Medicine.

THE Rockefeller Foundation has offered five scholarships, each of $1000, to Indian medical graduates, selected by the Scientific Board of the Indian Research Fund, for the purpose of post-graduate public health work in America.

Lord Yarborough formally presented to Lincoln County Hospital on April 7th the new X ray department and pathological laboratory which has been erected and equipped by the Lincolnshire Yeomanry as a war memorial.

ROYAL NAVY MEDICAL CLUB.—The annual dinner will take place at the Trocadero Restaurant on Thursday, April 27th, at 7.30, for 8 P.M. Members who wish to be present are asked to inform the Hon. Sec., Royal Navy Medical Club, 68, Victoria-street, London, S.W. 1, not later than April 20th.

HARVEIAN SOCIETY.—A meeting of this Society will be held at the Town Hall, Harrow-road, Paddington, London, W. 2, on April 27th, at 8.30 P.M., when a discussion will take place on Influenza. The speakers will be: Dr. Sidney Phillips, Sir Humphry Rolleston, Sir Thomas Horder, Dr. R. A. Young, Dr. Thoresby Jones, Dr. Beaumont, and Dr. Freeman.

FRENCH CONGRESS OF MEDICINE, 1922.—The sixteenth French Congress of Medicine will be held in Paris on Oct. 12th, 13th, and 14th. The officers of the congress are as follows: President, Dr. Fernand Widal; vice-presidents, Drs. G. Thibierge and Louis Martin; general secretary, Dr. A. Lemierre; assistant secretary, Dr. M. Brulé; treasurer, Dr. E. Joltrain. The subjects of discussion will be: Differential Diagnosis between Gastric and Duodenal Ulcer (Drs. E. Enriquez, G. Durand, A. Cramer, Ch. Saloz); the Pathological Significance of Abnormalities of the White Blood Cells (Drs. Sabrazès, Lemaire); Preventive and Curative Treatment of the Deficiency Diseases (Drs. Weill, G. Mouriquand, F. Rathery). The congress is open to members of the "Association des Médecins de langue française," and—subject to the approval of the committee—to such medical men and others interested in medical questions who desire to attend. The fee for members of the congress is Fr.40; medical students and members of the families of members will be admitted as associate members on payment of a fee of Fr.20. Those desiring information should write to the Bureau de l'Association pour la Développement des Relations Médicales avec l'Etranger, at the address of the Bureau du Congrès, 12, Rue de l'École de Médecine; or to Dr. A. Lemierre, 217, Rue du Faubourg St. Honoré, Paris 8e.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, April 19th.

HISTORY OF MEDICINE: at 5 P.M.

Paper:

Mr. Victor G. Plarr (Librarian, Royal College of Surgeons): Some Account of the Roll of Fellows of the Royal College of Surgeons of England (1843–1922).

Monday, April 24th.

ODONTOLOGY: at 8 P.M.

Casual Communication:

Mr. J. Howard Mummery: Notes on Dental Diseases in Ancient Egypt, demonstrating some Photographs forwarded by the late Sir Armand Ruffer.

Papers:

Mr. Evelyn Sprawson: (1) A Case of Multiple Follicular Odontomes (Dentigerous Cysts) in the Mandible, and some remarks as to the Pathology of such Cysts. (2) On the Significance of the Extra Cusp commonly found in the Antero-internal Aspect of the Maxillary First Permanent Molar in Man.

Tuesday, April 25th.

MEDICINE: at 5 P.M.

Clinical Meeting at the Middlesex Hospital, W.

Thursday, April 27th.

UROLOGY: at 8.30 P.M.
Discussion: On Tests of Renal Function.

Friday, April 28th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Presidential Address.

EPIDEMIOLOGY: at 8 P.M.
Paper:
Outbreaks of Enteric Fever Associated with Carrier Cases.

Saturday, April 29th.

OTOLOGY.
Meeting at Leicester at 12 o'clock at Wyvern Hotel. 2 P.M., Meeting at Infirmary: Cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, April 17th.—2.30 P.M., Dr. Saunders: Medical Wards.
TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Wards.
WEDNESDAY.—2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY.—2 P.M., Mr. Armour: Operations.
FRIDAY.—2 P.M., Mr. Sinclair: Surgical Out-patients.
SATURDAY.—10 A.M., Mr. Banks-Davis: Operations, Throat, Nose, Ear.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

BRITISH MEDICAL ASSOCIATION (CHESTERFIELD BRANCH) POST-GRADUATE COURSES.
FRIDAY, April 21st—(At Chesterfield Royal Hospital Board Room) 2.30 P.M., Mr. Pooley: Eye Conditions Associated with Bodily Disorders. 3.15 P.M., Mr. Ferguson Wilson: Injuries in the Region of the Elbow Joint.

Appointments.

BARNES, G. C., M.B., Ch.B. Liverp., D.P.H., has been appointed Medical Officer of Health, Southport.
BOWEN, W. H., M.B., B.Ch.N.U.I., Medical Officer, Wexford County Home, Enniscorthy.
MORTON, H., M.D., C.M. Glasg., F.R.F.P.S. Glasg., to the Chair of Medicine in Anderson College, Glasgow.
PATERSON, D. H., M.B., Ch.B. Edin., M.R.C.P. Lond., Physician to Out-patients at the Hospital for Sick Children, Great Ormond-street.
Certifying Surgeons under the Factory and Workshop Acts: VERNIQUET, W. G., M.B., B.Ch. Camb. (Kingsbridge); DOWNING, C. C. R., M.R.C.S., L.R.C.P. Lond. (Cardiff).

Vacancies.

For further information refer to the advertisement columns.

Balham, Weir Hospital, Grove-road, S.W.—Res. M.O. £200.
Birmingham Cripples' Union, Open Air Hospital.—Res. S. £250.
Burnley County Borough.—M.O. for Ven. Dis. £850.
Cambridge, Addenbrooke's Hospital.—H.P. £130.
Charing Cross Hospital.—Obstet. Reg.
City of London Hospital for Diseases of Chest.—H.P. £125.
Deptford Metropolitan Borough.—Asst. M.O.H. and Tuberc. O. £757 11s.
Durham, Ministry of Pensions Neurological Hospital, Shotley Bridge.—Jun. M.O. £350.
East London Hospital for Children, &c., Shadwell.—Res. M.O. £200. H.S. and H.P. Each £125. Radiologist. £100.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Harrogate Infirmary.—H.S. £150.
Hospital for Consumption and Diseases of Chest, Brompton.—Asst. in Dept. of Path. £250. H.P. £50.
Hospital for Epilepsy and Paralysis, &c., Maida Vale.—Res. M.O. £150.
Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Path. £300. H.P. £50.
Huddersfield Royal Infirmary.—Jun. H.S. £200.
Hull Royal Infirmary.—Sen. H.S. £200.
King Edward Memorial Hospital, Ealing.—H.S. £200.
Leeds General Infirmary.—Res. Orthopædic O. £150.
Leicester Royal Infirmary.—H.P. £150.
London Temperance Hospital, Hampstead-road.—Surg. Reg. 40 guineas.
Maidstone, West Kent General Hospital.—H.S. £220.
Manchester, Baguley Sanatorium.—Third Asst. M.O. £300.
Manchester Royal Infirmary.—Second Med. Reg. £150. H.P. £100.
Metropolitan Hospital, Kingsland-road.—Cas. O. and Res. Anæsth. £120. Asst. H.P. and Asst. H.S. Each £100.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—H.P.'s. and H.S.'s. Each £50. H.S. to Out-patient Dressing Dept. £100.
Poplar Hospital for Accidents, E.—Asst. H.S. £150.
Royal Ear Hospital, Dean-street, Soho, W.—H.S.
Royal Waterloo Hospital for Children, &c., Waterloo-road, S.E.—H.P. £100.
orge's Hospital, S.W.—Part-time Pathologist. £100.
St. Mary's Hospital Medical School, Paddington.—Asst. Director to Surg. Unit. £750.
Sheffield Royal Hospital.—Asst. Cas. O. £150.
Stoke-on-Trent, North Staffordshire Infirmary.—Hon. Asst. Ophthal. S.
Stroud General Hospital.—H.S. £200.
University College Hospital, Gower-street, W.C.—Two Hon. Anæsthetists.
Wakefield, Middleton-in-Wharfedale Sanatorium.—Asst. M.O. £500.
Warrington, Lancashire County Asylum, Winwick.—Asst. M.O. £300.
West Ham County Borough.—Asst. Tuberc. O. £550.
West London Hospital, Hammersmith-road.—Non-Res. Cas. O. £5 5s. per week. Hon. Med. Radiographer.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. H.P. £52.
Wimbledon Borough.—M.O.H. and Sch. M.O. £800.
Woolwich Union Infirmary, Plumstead High-street.—Asst. M.O. £350.
Wrexham Infirmary.—H.S. £150.

The Secretary of State for the Home Department, S.W., gives notice that he proposes to appoint an additional Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 20, and to be attached more particularly to the Hinckley, Leicester, Market Harborough, and Melton Mowbray County Courts. Applications should be addressed to the Private Secretary, Home Office, and should reach him not later than April 29th, 1922.

Births, Marriages, and Deaths.

BIRTHS.

PITTS.—On April 3rd, at a Nursing Home, the wife of A. T. Pitts, D.S.O., M.R.C.S., L.D.S., of a son.
RITCHIE.—On April 2nd, at Rothesay-place, Edinburgh, the wife of Dr. W. T. Ritchie, of a son.
TELLING.—On March 27th, the wife of Dr. A. L. Telling, Augusta-road, Ramsgate, of a daughter.

MARRIAGES.

LEMPRIERE—BAKER.—On April 6th, at Great Amwell, Herts., Lancelot Raoul Lempriere, O.B.E., Medical Officer at Haileybury College, son of the late Captain P. R. Lempriere, R.A., to Wenefride Southey Baker, daughter of the late Thomas Southey Baker, of Auckland, New Zealand.
PINTHU SAI—SUGON JAYAKARA.—On March 4th, 1922, Pinthu Sai, M.B., B.S. Lond., M.R.C.S. Eng., L.R.C.P., Director of Siriraj Hospital, Bangkok, Siam, old student of St. Thomas's Hospital, London, to Mlle. Sugon Jayakara. The old custom of the Siamese matrimonial ceremony was officiated by eight Bhuddhist monks.

DEATHS.

BAIN.—On March 31st, at S. Helier, Jersey, C.I., Lieut.-Colonel David Stuart Erskine Bain, I.M.S., retired, aged 66 years.
BERTOLACCI.—On April 2nd, at The Sands, Runfold, John Hewetson, aged 72 years, beloved husband of Kathleen Bertolacci. Funeral service held at Seale Church, Farnham, Friday, April 7th.
BOYD.—On April 4th, at Manor-place, Edinburgh, Francis Darby Boyd, C.B., C.M.G., Colonel Territorial Army Reserve, Professor of Clinical Medicine in the University of Edinburgh, aged 55 years.
CRAWFORD.—On April 4th, at Orchard Lea, Swanley, J. Dawson Crawford, J.P., M.D., aged 54 years.
HIGGS.—On April 2nd, at Beaconsfield House, Dudley, Thomas Frederic Higgs, M.D., J.P., in his 87th year.
MANSON.—On April 9th, at Portland Court, W., Sir Patrick Manson, G.C.M.G., aged 77 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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ROSA-JOSEPHA BLAZEK: THE BOHEMIAN TWINS.

BY SIR JOHN BLAND-SUTTON, F.R.C.S. ENG.

THE monsterhood of the conjoined twins known by this name, which came to an end a few days ago in Chicago, is of sufficient interest to attract the attention of readers of THE LANCET, for it contains many features of interest in comparison with other well-known twins, similarly united, who have had the misfortune to survive birth.

Rosa and Josepha, two well-formed girls, were joined by their sacra, and were double with the exception of the external genitalia and anus. The genital canal, though single, led into two separate uteri, and the single urethral orifice led into two separate bladders. These facts have been demonstrated in a remarkable manner. As is usual with pygopagous twins they were exhibited for gain. Whilst in the neighbourhood of Prague the twins had some difficulty with urination and Prof. V. Kukula[1] succeeded in removing a vesical calculus the size of a large hen's egg by litholapaxy. The stone was in Rosa's bladder. At the time of the operation Kukula made a careful examination of the uniting bond and satisfied himself that it was impossible for a separation operation to be successful.

It is well established that conjoined twins differ from each other in temperament, tastes, and habits; but in none has this been so strongly exemplified as in the Bohemian twins, especially in relation to sexual inclination. Rosa had sexual relations with her manager and not only conceived, but gave birth to a living child at Prague. The details of this unique obstetric event were published by Trunecek (1910). The child was in Rosa's womb, but Josepha as well as Rosa had milk in her breasts. The child was well formed, survives his parents, and probably inherits the ample fortune which they have made by public exhibition. Apart from many complications inherent in a bondage of this unhappy nature there is the thought: What will happen if one twin dies before the other? The facts available indicate that they die, as a rule, within a few hours of each other, as in the present case.

The Siamese twins, Chang and Eng Bunker, lived to be 63. Chang, who for some years before his death had been hemiplegic, had a bronchial attack and was found dead in the early morning. Eng died two hours after realising that his brother was dead. The doctors attributed Eng's death to "syncope induced by terror." The Hungarian sisters Helena-Judith expired at almost the same instant.

The exception is the Orissa twins, the two attractive girls Radica-Doodica. These, like the Siamese twins, were xiphopagous. Doodica had tuberculous peritonitis and the uniting band was divided by Doyen. Doodica died seven days later, Radica survives. In 1866 Dr. Boehm operated on xiphopagous twins (his own daughters) a few hours after birth, and one died.

The separation of pygopagous twins is an impracticable surgical operation.

INDUSTRIAL ALCOHOLISM.

I.—ALCOHOL IN RELATION TO INDUSTRIAL HYGIENE AND EFFICIENCY.*

BY SIR THOMAS OLIVER, M.D. GLASG., F.R.C.P. LOND.

ANY inquiry into the relation of alcohol and industrial hygiene will be incomplete if it leaves out of consideration the home conditions of the worker and the manner in which he spends his leisure hours. There are also the nature of the employment, personal idiosyncrasy, and hereditary influences to be thought of. Temperance insurance offices lend the weight of their statistics to the opinion that no matter what may be the occupation followed by an alcoholic subject, his life in most instances is shorter than that of a non-alcoholic workman engaged in the same trade. No one questions the harmful effects of the immoderate use of alcohol, yet opinion is divided as to whether alcohol never plays a useful part in vital processes; opinions are divided as to the value of alcohol as a food and the part it plays in the human body in disease. Under the influence of alcohol upon the brain nerve force is liberated, but it is not always so well controlled and directed as under normal conditions; the stimulation is fugitive and it is replaced by depression.

[1] THE LANCET, 1906, i., 345.

* An abstract of the Shaw Lecture delivered before the Royal Society of Arts on March 29th, 1922.

Opinions Relating to Muscular Work.

Science has been invited to give expression of her experience in regard to the relationship of alcohol and muscular work. Rivers, in his monograph, tells how Lombard, by means of the ergograph, found that alcohol primarily increased the amount of muscular work done, and that this continued for a short period. Rossi similarly observed a slight increase, followed by a fall. Frey, on the other hand, found a primary diminution of work done, but that if alcohol was administered after fatigue had set in it had a decidedly beneficial effect. According to Frey, alcohol has a peculiarly double effect: (1) It acts injuriously upon the nervous system and diminishes work; (2) it acts as a muscle food and is therefore helpful. Other physiologists have found that while alcohol has no special influence upon healthy muscular fibre, it is capable of whipping up tired muscle so that it becomes capable of doing extra work, but the period during which this continues is short; it is followed by a fall and the decline is always to below the normal.

Occupational Incitement to Alcoholic Drinking.

So far as industry and alcohol are concerned, there are certain occupations which, if they do not predispose, certainly encourage persons employed in them to take alcohol to excess. This remark applies particularly to persons engaged in the manufacture and sale of alcohol. There are, however, certain trades and conditions under which labour is carried on which create a desire for stimulants. Too long hours, working overtime and Sunday labour, also over-speeding, by producing fatigue, create a desire for stimulants. Hard physical labour, such as the puddling of iron and work carried on in overheated atmospheres, has a similar tendency. Dusty occupations by causing dryness of the mouth and throat also encourage intemperance. There is one trade particularly apt in this connexion, the making of mill-stones for the grinding of cereals, &c.

Accidents and Loss of Time.

It is pointed out by nearly every writer upon the subject that the larger number of accidents happen in factories and shipyards on Monday following indulgence on the part of the working man at the week-end. Since May, 1914, when the public-houses have not been opened until 10 A.M., there is in this country a feeling that there have been fewer accidents on Monday, but the conditions under which, during and since the war, labour has been carried on do not enable us to speak definitely in regard to this.

Irregular time-keeping—and many employers consider this equally as important as the question of accidents—is largely the result of drinking, but this occurs also among total abstainers. There is more irregular time-keeping in the shipbuilding industry than in such trades as engineering and iron and steel making. Several circumstances may contribute to this. It may be that exposure to severe weather in winter with rain and high winds has something to do with the greater loss of time. It is hardly right to have men working in their wet clothes and catching cold through hanging about afterwards, for this circumstance of itself tempts the workman to take alcohol.

Alcohol and the Sailor.

It seemed to me that it would be helpful if I could ascertain the opinions of large shipping firms in regard to the part which alcohol plays in the life and work of the British seaman.

Some of the remarks made, and the suggestions offered, by these firms are interesting and call for notice. There is the opinion that as a class seamen are well behaved and compare favourably with men in other occupations. Opinions are divided as to whether alcoholic drinks should be taken to sea and sold by the captain of the ship to the men, for there is a feeling that it is the deprivation of stimulants during a voyage which is partly responsible for the men breaking loose when they reach a seaport. It is an open question whether the stopping of advanced pay to seamen would diminish the amount of drinking when a port is reached. Of all occupations that of going to sea is one in which total abstinence has its particular advantages, for whether abstainers are better workers or not, they at any rate are more reliable under all circumstances. It is worth considering whether stoppage of advanced pay, not only to seamen, but to men employed in other occupations, would diminish drinking.

It is generally admitted that the subdivision of labour and the multiplication of machinery have made present-day work monotonous, and in certain quarters there is a feeling that alcohol by paralysing the critical faculty blunts the senses to the influence of monotony. The remedy, therefore, is not solely to denounce alcohol, but to widen the interests of the working classes by making work more congenial, if that is possible. So far as the man who uses alcohol sparingly and in moderation is concerned, neither experience nor physiology shows that he is an inferior workman to the abstainer. Although the question is mainly a personal one, in the Western Hemisphere it is being made a race problem. A few years ago, had I asked myself whether abstaining

nations or peoples had done more work and better, and had contributed in larger measure to the cause of civilisation than those using alcohol, I should have felt inclined to answer No; to-day the answer must be withheld, for a large, vigorous and prosperous nation has taken upon itself the task of making its people sober. It cannot be said of the Mohammedan races of Asia and of Eastern Europe, for example, that total abstinence has raised them to a higher plane of civilisation, given them a prominent place in the industries of the world, or conferred upon them those practical qualities so characteristic of the men of the West.

II.—THE USE OF ALCOHOL BY INDUSTRIAL WORKERS.†

BY EDGAR L. COLLIS, M.A., M.D., M.R.C.P.,
MANSEL TALBOT PROFESSOR OF PREVENTIVE MEDICINE, WELSH NATIONAL SCHOOL OF MEDICINE.

ALCOHOL (by which is commonly meant ethylic alcohol, C_2H_5OH) may be regarded as a food in that it contains energy which can be used by the body in performing work or in maintaining body heat, but its energy is less than—and cannot be stored up in tissue like—that of meat, fats, or carbohydrates. Alcohol is not, therefore, a perfect food. As a drug it is essentially *sedative*, capable of diminishing irritation or tiredness, but the latter feelings are natural safeguards against over-fatigue, which it may be dangerous to disregard. The term "stimulant" applied to it is physiologically a misnomer. Alcohol can also establish a drug habit by creating first a certain degree of tolerance to itself, and then a craving if it is not taken. It is a poison in that, immediately, as the result of one dose, or gradually, as the result of many doses taken habitually over long periods, it may interfere with bodily functions and endanger life.

The Effect of Industry upon Alcoholism.

The development of industry in this country has certainly been associated with a rise in alcoholism; so much so that Lecky called it "the main counteracting influence to the moral, intellectual, and physical benefits that might be expected from increased commercial prosperity." Previous to 1700, brandy, the only spirit in common use, was too costly to be popular; in the eighteenth century, distillers began to produce whisky and gin, and simultaneously "dropsy" as a cause of death in the London bills of mortality attained remarkable dimensions. Meanwhile, mass production, stimulated by the introduction of mechanical power—what we know to-day as industrialism—made its appearance. Certain aspects of modern industrial life may fairly be instanced as conducive to alcoholism. Compared with home industries and agricultural labour there is, associated with industrial work, a steady drive urging each unit to keep pace with the whole organisation; and there are processes calling for considerable expenditure of energy over many hours, while exposed to the heat of forges and furnaces, or to dry thirst-creating dust; there are, in fact, elements conducing to tiredness and fatigue on the one hand and to a loss of body fluid on the other. An alcoholic beverage which dulls the sensation of fatigue and replaces the lost fluid must seem to tired workers to present the ideal of their needs. Here are physiological reasons why industrialism may have stimulated intemperance.

A social effect not necessarily associated with industrialism has been the paying of unduly low wages. The late Sir William Mather pointed out the result. At one time he raised the wages of all his low-grade labour from 15*s*., then the prevailing wage, to £1. Not only did better work and better timekeeping follow, but also a great decrease in intemperance. The rise in wages caused a lift in social position which made it impossible to drink on £1 a week where it had been possible on 15*s*. There is evidence that previous to the war, when the standard of living was improving, the consumption of alcohol per head of the population was steadily increasing.

The effect of industry upon alcoholism cannot be fully considered without reference to industrial, as contrasted with convivial, drinking. By industrial drinking is meant the custom of drinking during working hours. Among dock-labourers, who are accustomed to sudden spurts of hard muscular effort, with little control by employers of any drinking propensities, the custom has grown up to take alcohol before commencing work in the morning, again at the breakfast interval, also mid-morning, in the dinner hour, and again mid-afternoon; in fact, as the effect of each dose taken has begun to wear off, the craving for another has been indulged in, until these workers have come to consider that alcohol is necessary to their work. If the habits in other industries as regards taking alcohol were reviewed, they would be found to grade from those of the dock-labourer to those of the agriculturist, who, for lack of opportunity and other reasons, has never acquired the habit of drinking while at work. In contrast with the dock-labourer, the coal-miner may be instanced; danger from drunkenness below ground is so great that rigorous supervision is enforced and the miner is cut off from alcohol for the time he is in the pit. When work is over, however, the miner is a great convivial drinker; he stands foremost as regards convictions for drunkenness, yet has a comparatively favourable mortality from alcoholic diseases—an illustration of the fact that industrial drinking, which is essentially chronic alcoholism, is far more injurious than convivial drinking which may be spasmodic. Modern industry subjects the human organism to an environment and to methods of work entirely different from those of man's prehistoric ancestors, from whom has been inherited a sensation of pleasure from the taste of alcohol; in the present largely industrial organisation of society, the fact that alcohol possesses that pleasant taste may have become a dangerous anachronism. As regards the relation between industrial drinking and industrial feeding, as long ago as 1861, Dr. Edward Smith wrote that "as small meals are conducive to muscular exertion, it is worthy of consideration if those who are engaged in manual labour for many hours would not perform it with more ease if there were more frequent but shorter intervals for rest and for meals, instead of three meals a day at long intervals with the single long interval of rest between 8 A.M. and 6 P.M. It is very probable that more work would be done, and at a less cost to the workmen." Long hours in factories remove workmen from opportunities for taking food often; at the same time by calling for muscular exertion they conduce to fatigue, a potent influence tending to alcoholism. One of the most notable actions taken by the Liquor Control Board during the war was the effort made to remedy this state of affairs by instituting industrial canteens.

The Effect of Alcohol upon Industry.

Evidence from America points to less labour turnover—i.e., drifting of labour from one factory to another—under prohibition, and also to greater regularity of attendance; but the acid test is the productivity of workers when they are present; despite the difficulties of elucidating facts in this matter, there is a certain amount of evidence, based on laboratory observation, which leaves but little room for doubt. A dose of one and a quarter pints of beer or 2 oz. of whisky has been found to retard the rapidity and extent of reflex movements—knee-jerk, eye-closing reflex, &c. The effect upon voluntary movements has not been fully demonstrated; in one case of hill-climbing a dose of one and a quarter pints of beer impaired performance by 12 to 14 per cent. The effect upon skilled movements has lent itself to more accurate observation; alcohol impairs the speed of directing the gaze and the capacity for keeping objects in focus. An extreme instance of the latter difficulty is the well-known tendency for the alcoholic to see "double." Experiments wherein fine movements are performed in carrying out definite processes, such as manipulating a typewriter or an adding machine, have demonstrated that alcohol delays performance and increases mistakes. Industrial accidents, the great majority of which are now accepted to be due to "lack of care" or personal errors on the part of operatives, should be increased by alcohol. Vernon attempted to estimate the effect by observing the occurrence of industrial accidents which occurred at three different stages of liquor restriction during the war: the accidents were at a maximum in the first spell in the first statistical period, and fell off in subsequent periods—i.e., as the average consumption of alcohol diminished.

† An abstract of an address delivered on April 11th at the opening of a discussion at the Society for the Study of Inebriety.

RAILWAY FACILITIES FOR BRITISH SPAS.

THE Federated Spas, comprising Bath, Buxton, Cheltenham, Droitwich, Harrogate, Leamington, Llandrindod Wells, Strathpeffer, and Woodhall, have called the attention of the Railway Clearing House to the drawbacks suffered by British inland resorts owing to the existing high cost of travelling. Complaint is made that cheaper facilities, tempting through-fares, and the advantages of the foreign exchange induce many patients to go to the continent who would otherwise spend their money in England. Inland spas differ from seaside resorts in being frequented by the invalid whose expenses are heavy and means of subsistence already reduced. Increased railway facilities would, it is claimed, facilitate the desirable six-monthly visit to the spa; they would make it possible for those in the south to visit northern spas, and for those in North Britain to visit southern spas. The Federation, in asking for return tickets available for a month at reduced fares, points out that the tariff for baths and mineral waters has already been substantially reduced and that the hotels are making a similar sacrifice. We regard the interests of the spa and of the railway company as so closely tied up as to be indistinguishable. What is good business for one is good business for the other, and we have no doubt that improved travelling facilities of the kind suggested would result in comfort and satisfaction to the many who require spa treatment and materially benefit both the travelling agencies and the health resorts themselves. We hope the International Railway Conference sitting this week at Rome will have something to say about it.

NON-RESIDENT PRIVATE NURSES.

THE following names of nurses prepared to do non-resident private nursing in the London area have been received since the publication of former lists (THE LANCET, Feb. 11th, p. 305, March 11th, p. 514).

Districts.	Nurses available.	Where obtainable.	Telephone.
Kensington ..	1	.. P (6) ..	—
Victoria ..	1	.. P (7) ..	Victoria 956.
Deptford ..	2	.. P (8 and 9) ..	—

P (6) = Nurse Hargraves, 49, Drayton Gardens (Flat 4), W. Brompton, S.W. 10.
P (7) = Miss Iris C. Burnett, 116, Ebury-street, S.W. 1.
P (8 and 9) = Miss M. E. Carey and Miss E. M. Laws, 13, Wotton-road, Deptford, S.E. 8.

THE ATAXIAMETER.

IN a recent issue of the *Journal of Industrial Hygiene* Mr. W. R. Miles describes an investigation of static equilibrium as a test of motor control. He measured the swaying of the body when a man tries to stand motionless with the eyes either open or shut. The apparatus used, known as an ataxiameter, consists of an indicator fixed to the head which, when it moves, automatically records all anterior-posterior and lateral components of any sway present. He found that practice with the apparatus made but little difference in the capacity to stand steady; that the amount of sway recorded varied inversely with the efficiency of the neuro-muscular mechanism, and that it was greater with the eyes shut than open. Tall persons with small feet tend to sway more than short ones with broader feet; but many more observations are needed to establish a norm for persons differing in stature and weight.

A NURSERY HOTEL.

To the Editor of THE LANCET.

SIR,—I happen to have personal knowledge of the nursery hotel at Hillside, Whitchurch, Oxon, mentioned in your last week's issue, and would like to say that you have certainly not overstated its merits. The ideal that the establishment should be run as a real home, not an institution, is never lost sight of. The house is spacious and the windows large, whereas the lawns and gardens form playgrounds. Both superintendents of the hotel were trained at Great Ormond-street and are personally known to many consultants of the West End of London. No tuberculous or diseased children are admitted, so parents need have no fear of their children mixing with unhealthy ones. Their children will be cared for as well as, if not better than, at home.

I am, Sir, yours faithfully,
LEONARD LESLIE, M.D.

Streatley, Berks, April 10th, 1922.

MENTAL HOSPITALS IN INDIA.

THE clear manner in which the statistics of recovery of the inmates of the lunatic asylums of Bengal are presented by Lieut.-Colonel F. O'Kinealy, I.M.S.,[1] is of interest in view of the notorious difficulty of interpreting such figures.

The types which presented the largest number of patients were mania, melancholia, and insanity caused by cannabis indica or its preparations and derivatives, for which 88, 80, and 33 lunatics were admitted on an average annually, or 31, 28, and 12 per cent. of total admissions. There were on an average 403, 299, and 180 lunatics of these types under treatment in each of the past three years. Other types which formed a large proportion of the asylum population were dementia and delusional insanity, for which 93 and 76 lunatics were under treatment during each year on an average. The annual average number of recoveries among the lunatics of these five types was 55, 34, 12, 1, and 4 respectively. The most prolific ætiological factors were intoxicants, chiefly ganja, which accounted for 23 per cent. of the average annual admissions of the past triennium.

According to the report the diet is liberal and varied. Patients received meat and fish on alternate days, and an ample supply of fresh vegetables is provided from the asylum gardens. Patients found to be losing weight and the feeble and infirm are supplied with extra diet and medical comforts. The food is inspected daily by the superintendents. As to amusements and pastimes, every effort is made both at Dacca and Berhampore to make the life of the patients happy and contented. Treats are given to lunatics at the times of festivals. Daily issues of cigarettes, tobacco, and betel are given to sane patients, and the literate inmates are given books, newspapers, and monthly magazines. Various games and musical instruments are also provided.

[1] Triennial Report of the Lunatic Asylums of Bengal for the Years 1918, 1919, 1920. Calcutta: The Bengal Secretariat Book Depôt. 1921. R.1–7.

GOATS' MILK.

AMIDST other articles in the British Goat Society's interesting year book for 1922 appears one in which Mr. B. D. Z. Wright, M.R.C.S., appeals for an extension of the use of goats' milk, on the score of its superior digestibility, its proved value in cases of marasmus and its freedom—in this country at all events—from tuberculosis. The production of good milking strain stud goats, the suggested holding of small district shows for cottagers, and the possibility of lectures at women's institutes in the country are means mentioned by him of spreading the custom of keeping goats. The assistance of the Small Stock Department of the Board of Agriculture is invoked in the matter of propaganda. The provision of goats to poor people willing and able to keep them would, in Mr. Wright's opinion, soon both reduce the bill now paid by the taxpayer for the provision of milk under the Maternity and Child Welfare Act, and materially increase the supply of a superior quality of milk throughout the country. Many poor people in rural districts, he points out, never obtain fresh cow's milk, owing to expense, difficulty of transport, and the preference of some farmers for selling their output wholesale to the large towns.

THE "DELEO" EVAPORATEUR.

WE have received from Messrs. Thos. Christy and Co., 4, 10, and 12, Old Swan-lane, Upper Thames-street, London, E.C. 4, an evaporation apparatus, a French invention which is now put on the English market. A white enamelled metal box, some 15 by 5½ inches and 2 inches deep, has a perforated lid. On removing the lid a rectangular opening is disclosed with a shallow trough surrounding it. The trough is filled with water. The substance to be evaporated is then added, and a piece of absorbent paper placed above. The lid having been put on, the charged apparatus is placed on a radiator, or where necessary an electric attachment can be used as a source of heat. In operation, hot air passing through the central opening of the box tends to dry the paper, which in its turn attracts the liquid in the trough. This liquid is again driven off by the heat, and gentle evaporation continuously takes place. The apparatus should prove useful where it is required to add moisture to the air of a room, or to diffuse medicaments or disinfectants. The vaporising solution can be made of any strength, varying with the medium employed and the object desired.

PUBLIC HEALTH IN THE STRAITS SETTLEMENTS.

THE following details are taken from the report of the Colonial Secretary, Mr. F. S. James, C.M.G., for the year 1920: The estimated population of the colony was 864,858. The crude birth-rate was 29·63 per 1000; the percentage of males born was 52, females 48. The death-rate, 33·20 per 1000, showed a slight increase on the rate of 1919. The lowest death-rates in the last ten years were 29·15 in 1915 and 30·70 in 1916; the decrease in mortality in those years was largely due to a wartime measure, and the repatriation of thousands of decrepit Chinese to their native land. The highest death-rates in the past ten years were 46·46 per 1000 in 1911, a very malarial year, and 43·85 in 1918, when the influenza epidemic struck the country. The infantile mortality (deaths of children under 1 year) in 1920 gave a ratio of 194·86 per 1000 births. The number of deaths from infantile convulsions, 3557 (all under 2 years of age), shows the urgent necessity for training further native midwives; many of these deaths are due to tetanus of the newborn and are preventable by ordinary cleanliness. There were 1189 still-births, mostly due to syphilis. The deaths from pneumonia and broncho-pneumonia (largely influenzal) were in 1920 four times the number in 1915, while 362 deaths were directly registered as due to influenza. The Tamil is the most delicate and the Chinese the hardiest of our Asiatic population. The Tamil suffers most severely from influenza and pneumonia, the Chinese least, while the Malay occupies an intermediate position. Deaths from these diseases are most numerous between 25 and 40 years of age, the most productive period of life. Beri-beri accounts for only 1025 deaths, against 1430 in 1919 and 1958 in 1918. This marked decrease is coincident with the use of parboiled or undermilled rice, supplemented by other articles of diet, instead of the highly-polished Siam rice. Now that the latter is again freely obtainable the beri-beri death-rate will doubtless rise. It may be said with confidence that rationing has benefited the health of the native races. The greatest number of deaths are attributed to malarial fevers (4690 deaths) and tuberculosis (3336 deaths). Each year since 1917, though never before, the deaths from tuberculosis have exceeded 3000. The deaths from malarial fevers are about the average. Dysentery caused 1085 deaths and diarrhœa 337. Dangerous infectious diseases notified in the colony have not played a large part in the mortality of the colony. There were 20 deaths from cerebro-spinal fever, 55 from plague, 33 from cholera, and 3 from small-pox.